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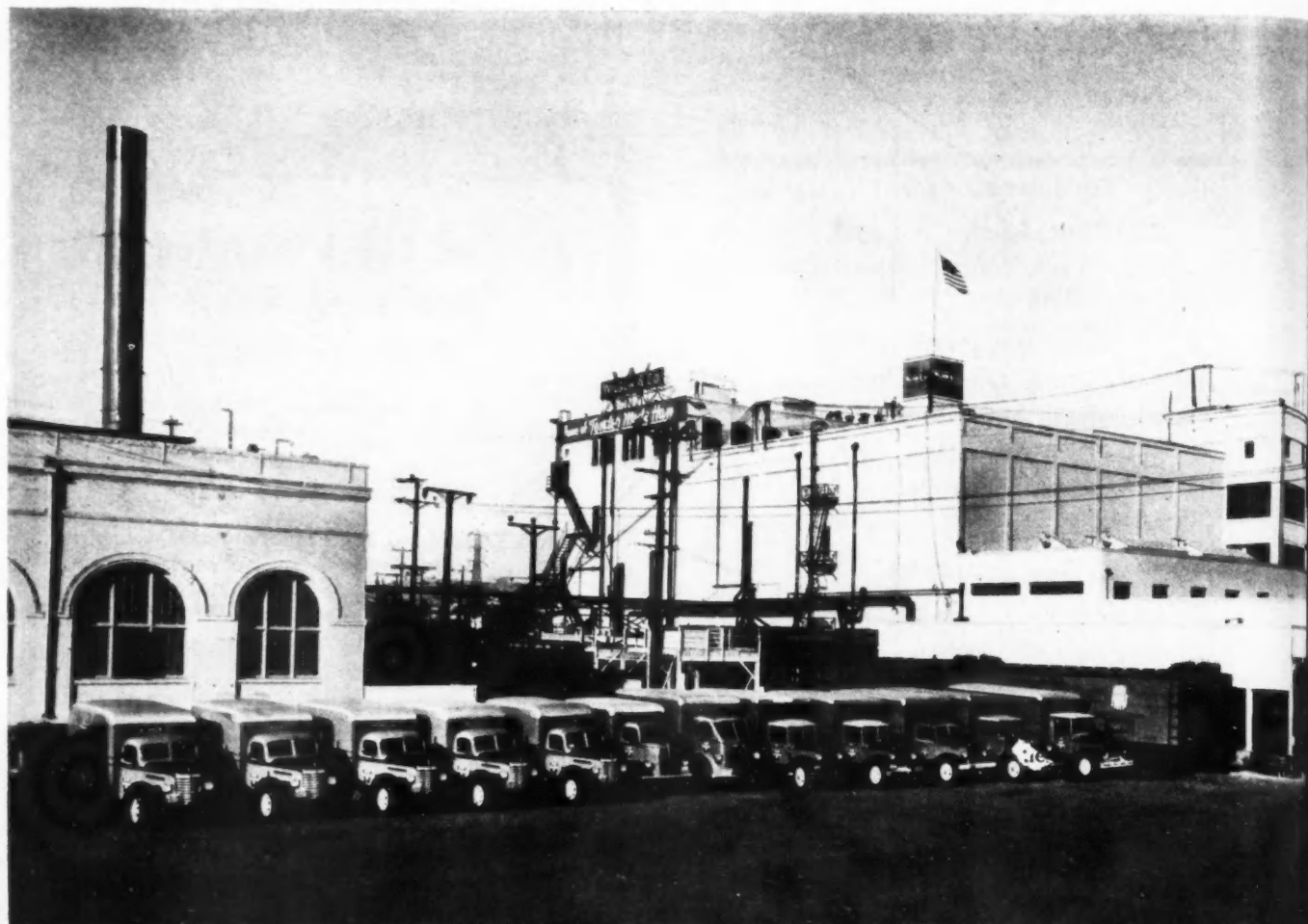
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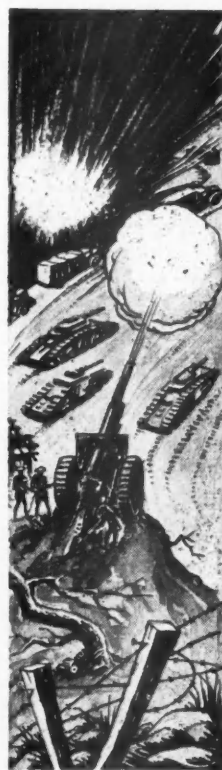
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COMMERCIAL CAR JOURNAL
NOVEMBER, 1940



COMMERCIAL CAR JOURNAL'S

FIFTH ANNUAL TRUCK SHOW AND NATIONAL DEFENSE SUPPLEMENT



IN normal times this is the period of the year when fleet operators show a keen interest in answers to the question "What's new in the truck industry?"

But these are not normal times, and at the moment fleetmen should have an even keener interest in knowing how the National Defense Program is likely to affect them; in knowing the problems that are raised by that program and how they can be solved without serious dislocation of routine highway transportation services.

In this special issue Commercial Car Journal gives its readers the answers to the annual question "What's new?" and to the special questions raised by the nation's defense effort. There is much that is new and all of it of practical value to fleet operators. But because the defense effort and its implications should be—and are—foremost in all our minds, Commercial Car Journal gives first place in this issue to a discussion of national defense matters by some of the leading figures in the industry.

To apprise them of the problems that confront truck transportation; to stimulate them in seeking certain changes to improve the efficiency of the vital services trucks will be expected to perform, and to reassure them that the nation's resources and the industry's resourcefulness are adequate to take care of all civilian needs and of the needs of the armed forces even if the present emergency should become more acute, we give our readers the following articles in the

NATIONAL DEFENSE SUPPLEMENT

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Restrictive state laws and regulations abet foreign agents in sabotaging an efficient defense

by **TED V. RODGERS**

President, American Trucking Associations, Inc.



Ted V. Rogers

WHAT would happen if it became known that agents of a foreign government were patrolling our highways day and night, holding up motor trucks, preventing movement of essential defense materials at a time when speed in transportation holds

the key to our national security?

Sabotage! Dirty work! The public would become fighting mad. The Federal Bureau of Investigation would swing into action. There would be no let-up until the culprits were tracked down.

Actually, something approximating this condition is taking place right under our very noses. Scarcely a voice has been raised to protest.

The saboteurs are not agents of a

foreign nation, although quite as effective.

Our own State laws—ridiculous restrictions and regulations—are standing in the way of defense progress. They are the barriers that are tending to disunite these United States.

Ironically, Tennessee—the Volunteer State, famous for the patriotism of her sons—is one of the worst offenders. The State is a leading producer of aluminum sheet and



MAN-MADE BARRIERS OBSTRUCT DEFENSE



other aluminum products that are essential to airplane production. Large quantities are shipped to the Glenn L. Martin Company at Baltimore for use in the manufacture of bombers for the armed forces.

These shipments move to Baltimore in large quantities, but only after a costly and time-wasting procedure. Because a Tennessee law limits trucks to a gross weight of 24,000 pounds, the shipments must be

hauled in small quantities to the Virginia border, where they are consolidated and reloaded onto larger vehicles for movement to the Martin plant through Virginia and Maryland, both of which permit loads far in excess of that allowed on Tennessee highways. This same exasperating procedure must be followed in reverse on shipments moving into Tennessee.

The Kentucky 18,000-pound law is working similar hardships on truckmen in the Blue Grass State. The defense emergency has resulted in substantial increases in the personnel of Fort Benning and other Army posts in that area. But supplies are not being moved fast enough or in sufficient quantity because of the Kentucky weight limitation. Trucks hauling defense materials are being stopped on the roads and their drivers held, sometimes for hours, until heavy fines have been paid. Rumor has it that a railroad organization has been giving highway patrolmen bonuses for stopping overweight trucks, and the state police chief has threatened instant dismissal

of any patrolman participating in this modern "hold-up" game.

This sort of thing has been going on for years, not only in Tennessee and Kentucky but throughout the United States. Without a doubt, truck transportation has been the target of more useless, destructive legislation than any other American industry. Non-uniform and conflicting, these laws are effective barriers to interstate commerce even in normal times. Their impairment of defense operations strikes at the security of the nation.

The importance of transportation to the defense program was recognized by President Roosevelt when he formed a transportation section as part of the National Advisory Defense Commission. It is the duty of this section to see that no "bottlenecks" develop in transportation. It is difficult to conceive of more harmful "bottlenecks" than the tangled network of highway barriers that is depriving our defense forces of full utilization of motor transportation.

When the defense program swings
(TURN TO PAGE 78. PLEASE)



HIGHWAYS AND



Dawes E. Brisbine

DOWN through all the centuries of what we smug humans like to call "civilization," intensified military operations have exerted a mighty influence in the evolution and improvement of transport. The combat-wagons of Darius and of the ancient Egyptians with their awkward, lumbering, solid wheels probably constituted the earliest mass usage of rolling vehicles. The war chariot was the forerunner of the modern tank.

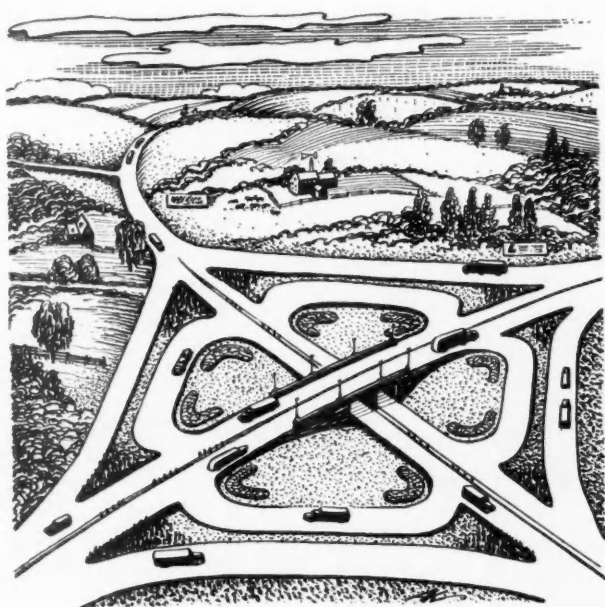
For a more practical comparison, we need only to recall the operations of the American Punitive Expedition in its thrust deep into the trackless wastes of northern Mexico. When Villa was on the rampage there were less than 100 motor trucks in the American army, but by the time Pershing was ready to lead out his column, approximately 4000 motor vehicles had been hastily accumulated.

Most of these trucks and cars were unfitted for the rough usages of a campaign even if there had been any semblance of roads. An insufficient number of drivers was available and makeshift mobile repair shops had to be conceived and thrown together.

By the time the column had moved 200 miles into the desert, half of these motor vehicles were out of commission.

"But we had gained an experience. We had learned that the motor truck was a superior form of transport; and we had learned the need for special organization and training to make it serviceable." ("Democracy in Reconstruction" by Frederick A. Cleve-

NATIONAL DEFENSE



Nation's 200,000 miles of paved highways are strategic asset to mobilized defense but weak and missing links must be reinforced

by LT. COL. DAWES E. BRISBINE

National Highway Users Conference

land and Joseph Schaefer, 1919.) The real test, however, came two years later when the American army in France demonstrated the true value of motorized equipment. The European army was using trucks in a limited way between the rail heads and advanced supply dumps, but

from there on munitions and rations were carried forward by horse-drawn vehicles. Practically all artillery was horse-drawn.

The 39th American division was the first major unit to be "enbussed" in its entirety. Both of its infantry brigades were moved in trucks from

the training area up to the reserve lines late in the afternoon and evening of August 4, 1918—an operation that was closely watched by allied staff officers. The movement was highly successful and forecasted what has since become the accepted method of transporting troops within the zone of operations.

Of all the nations participating in World War I, only Germany remembered and profited most by its lessons. Hitler today is the conqueror of continental Europe because he and his generals recognized the possibilities of mechanized equipment and motorized transport.

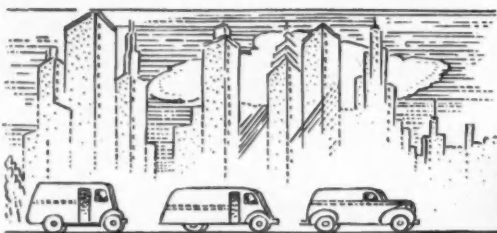
According to Benjamin Crowell in "American Munitions," early in the summer of 1917, \$175,000 was set aside by our Quartermaster Department for the designing and drawing of specifications for a standardized military truck. Eighteen thousand of these new vehicles were constructed and purchased by the army during the following year. In all, over 200 different makes of motor vehicles were actually in use by the American expeditionary force.

By 1919, the army owned approximately 85,000 trucks in addition to ambulances, passenger cars and motorcycles. Had the war continued another eight months, there were orders that would have brought the total of all vehicles up to 400,000.

On Dec. 31, 1939, the army had only 18,270 trucks and 805 passenger cars. This situation in rapidly being remedied but no estimates as to the present number are available.

Much has been written of the blitzkrieg into Poland and even more startling to the world was the thrust of Hitler's tank divisions and mechan-

(TURN TO PAGE 88, PLEASE)



Leon F. Banigan

DISCUSSION of "Preparedness and Private Operators" may be divided into two major considerations:

1. "Today"—

The role that the private truck will play in the "Preparedness Program" as an integral "tool" of production in industry and agriculture;

2. "Tomorrow"—The role that the private truck will play when National Defense requires military employment of peacetime tools.

To understand the important part which the privately operated truck can play in the preparedness program, it is necessary to identify private trucks and private truck operations as such.

The "private truck" is one which is owned and operated by a private enterprise and employed incidental to the operation of a private business in agriculture or industry. Its operation is as much an integral part of the production and distribution functions of its owner as is his machine or his plow.

More than eight trucks in every 10 in this country are private trucks—86 per cent of them, if you like statistics.

Handling only the property of its owner, the private truck covers a wide range of utility. It hauls the farmer's produce to market and his supplies back to the farm. It delivers your morning milk—that extra egg for that unexpected guest.

Single-unit operations, by small businessmen and farmers, account for the greatest number of private trucks in use. At the other extreme of private motor truck employment is that of private enterprises doing a nationwide business through decentralized

distribution set-ups—manufacturing and distributing to surrounding areas what people need. These areas are limited, usually, by distances that such trucks can cover within the hours of an ordinary working day.

Between these extremities, as represented by the individual unit operator on one hand and the national distributor on the other, are the thousands of small local businesses, each with its private fleet of two to 10 commercial vehicles—such as bakers, department stores, newspaper publishers, etc.

It is the place of all of these trucks in "preparedness" that we are considering. And, preparedness—so far

as the private motor truck is concerned—is here.

The private truck, primarily, is a "tool" of production. It is transportation—yes; but it is privately employed transportation, tailored to the needs of production and meshed into the gears of distribution.

Steel castings cool on private trucks en route to machine assembly plants.

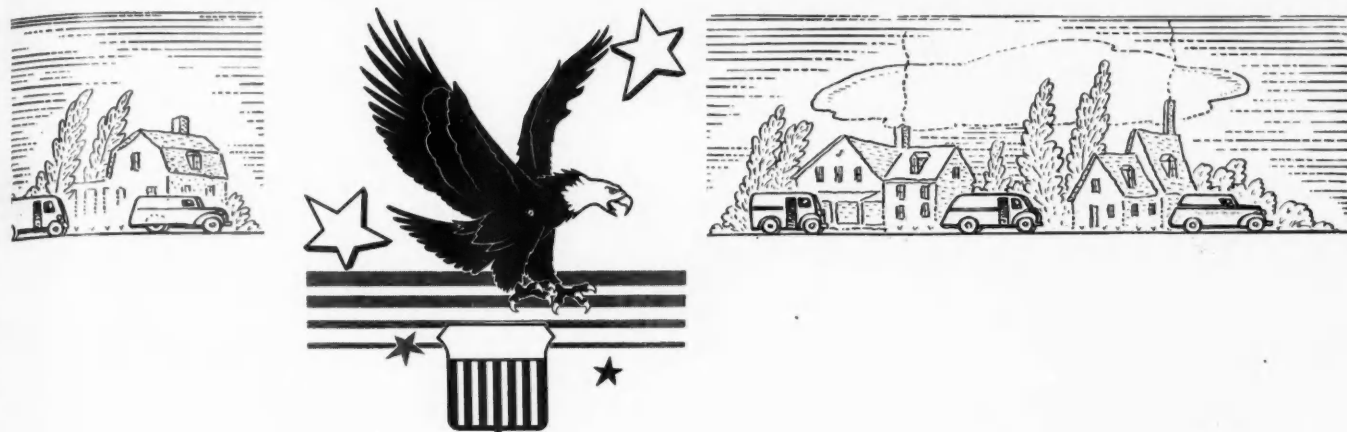
Farm products ripen on private trucks en route to market.

Such is the intimate link between production and the private truck. In considering the place of the private truck in preparedness, this is most important.

When military tanks, instead of



PRIVATE TRUCKS



Private trucks are indispensable tools of defense industries, and to meet defense and civilian requirements should not be diverted

by LEON F. BANIGAN

Managing Director, National Council of Private Motor Truck Owners, Inc.

& PREPAREDNESS

peacetime vehicles, are rolling off production lines, "preparedness" will still require that "steel castings cool on private trucks."

Efficient and economical preparedness—the marshalling of national resources in anticipation of emergency—depends upon coordination. This coordination will be best attained, so far as private trucks are concerned, if as little dislocation as possible of present facilities is assured and—if the necessity for such dislocation is predetermined on the basis of knowledge of the facilities available in relation to requirements and the consequences of such dislocation.

So long as the emergency does not

become more acute, it is logical to assume that the present operations of private trucks in industry and agriculture, while accelerated somewhat in keeping with increased "preparedness" demands, will not be seriously disrupted. However, private truck owners will expect to be called upon to participate in mobilization exercises, when deemed necessary, so that everyone may know what will be expected of him in the event of an "M-Day."

There is much talk about "M-Day"—sometimes with too little thought as to just what we mean. For purposes of this discussion, let's regard "M-Day" as the time at which a "national

emergency" calls for the physical mobilization of the transportation facilities of the United States in National Defense.

Since eight out of ten trucks are privately owned, it may be assumed that private trucks must, of necessity, constitute a substantial portion of the "M-Day" transportation facilities to be employed—particularly in the localities in which they are owned and operated. Indeed, "M-Day" planning, it would seem, must take account of all of the transportation facilities of the country, their fitness for the particular job to be done, and the manner in which they may be employed with the least impairment of the normal services for which they are required.

The National Council of Private Motor Truck Owners, Inc., representing the ownership of approximately 1,500,000 private trucks in industry and agriculture, advocates early and thorough study of all transportation requirements—by manufacturing and distribution zones—and the allocation of the transportation facilities within those zones to the duties for which they are best fitted, in the interests of national efficiency and economy.

Such a study, we believe, should be made by a suitable Federal agency and should include a census of all types of motor vehicles—their location, owners, age, type, capacity, etc. Furthermore, it should disclose the number of trucks of various types and capacities in various fleets, the present peacetime and "preparedness" employment of those trucks, and such specific information as may be obtainable concerning the number of such trucks which could be transferred to other necessary activities without materially disrupting the activities in which they are at present

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PRODUCTION FOR PREPAREDNESS

The truck industry has the plant capacity to satisfy projected war requirements without sacrificing commercial needs of the nation



Arthur C. Butler

to producers and users of motor vehicles.

"War is no longer simply a battle between armed forces in the field," states the U. S. Industrial Mobilization Plan (published in 1931 and revised last year.) "It is a struggle in which each side strives to bring to bear every material resource at its command. The conflict extends from the soldier in the front line to the citizen in the remotest hamlet in the rear."

"The success of a modern fighting force is dependent upon the Nation's readiness to satisfy promptly its requirements in munitions. In addition, throughout the duration of a war, the Nation must continue to provide all the material items upon which the health and well-being of its civilian population depend."

This country's defenses must be planned on that basis. The home front must be considered as well as the battlefield.

Strong civilian morale is as essential as military perfection.

With the increased demand by the army for more and more motor vehicles, a question has been repeatedly posed to the manufacturers of motor vehicles in recent months. This question is:

"Can the motor vehicle producers fulfill their full obligations to the military, and at the same time continue to make enough vehicles to meet the requirements of the farmer, the manufacturer, the retailer, the for-hire truck operator and all lines of business?"

The proper answer to this is that they have to—with defense the basic reason on both counts. When Napoleon said an army moves on its stomach, he meant supply lines must

AN "All-out War" is a newspaper phrase for a situation long recognized by the military planners of the United States and of basic significance

backstop the armed force. In modern "total defense" the supply line means far more than a wagon train hauling food.

It means, too, more than trucks hauling munitions and uniforms from factory to cantonments and airports. It means the cars or buses carrying workmen to defense factories, and the trucks carrying milk and groceries to the homes of those workmen. And so on all around the map.

Should the demands of the armament program become at some point so great as to cramp normal productivity we would find straight military production then expanding at the sacrifice of vital, if secondary, defense work. But this situation does not now appear on the horizon.

No absolute answer to the question of commercial vehicle productive capacity is now possible—dependent as it is on changing defense problems the future may have in store.

However, a rapid survey of the evidence at hand gives basis for hope and expectation that producers can perform their full share toward the creation of the needed, superlative military machine, while at the same time continuing to contribute adequately to a strong, smooth-running civilian industrial machine, the ideal and essential basis on which any successful defense mechanism rests.

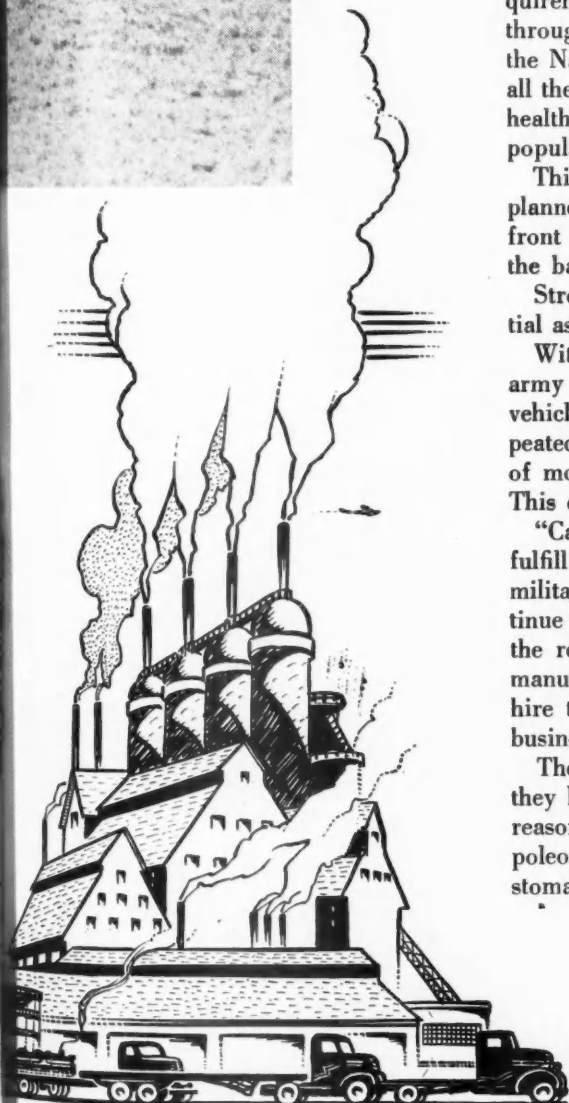
First of all, what is the size of the job the military branch of the government is calling upon the commercial vehicle producer to perform?

Under the defense program, more than 65,000 vehicles have been ordered since Jan. 1, last. House Bill 10572, just passed, provides additional appropriations for 78,000 vehicles, including 18,000 armored motorcycles.

One way to figure the full amount of equipment needed by the expanded army now planned is to take the assumption made in various informed circles that motorized needs work out at roughly one vehicle for every 10 men. On the basis of an army of
(TURN TO PAGE 100, PLEASE)

by **ARTHUR C. BUTLER**

Manager, Motor Truck Division,
Automobile Manufacturers Association





FUEL AND THE FUTURE



W. R. Boyd, Jr.

IF war came to America, the trucks could keep rolling along! Modifications in use and operation might be necessitated by war-time conditions,

but so long as the need for motor transport by the civilian population existed and the activity did not interfere with the military, motor trucks and buses would continue to obtain the petroleum fuels and lubricants their operation demands.

This prediction—and it can be only a prediction at present—presents a vastly different picture than is painted in reports from Europe. There war and its aftermath have left civilian motor transport of many countries stalled and impotent, lacking fuels and lubricants at a critical time when the people are in direst need of automotive service.

The favorable circumstances in which the American people would find themselves may be ascribed to the fact that they have developed the most efficient petroleum industry in the world, the largest petroleum reserves, the greatest productive capacity, and the most extensive and flexible system of distribution of petroleum products. Furthermore, the American people have for so long owned and operated most of the world's motor vehicles that motor

Proven reserves, great productive capacity and modern transportation mean enough gasoline for military and civilian needs even if war comes

by **W. R. BOYD, Jr.**

Executive Vice-President, American Petroleum Institute

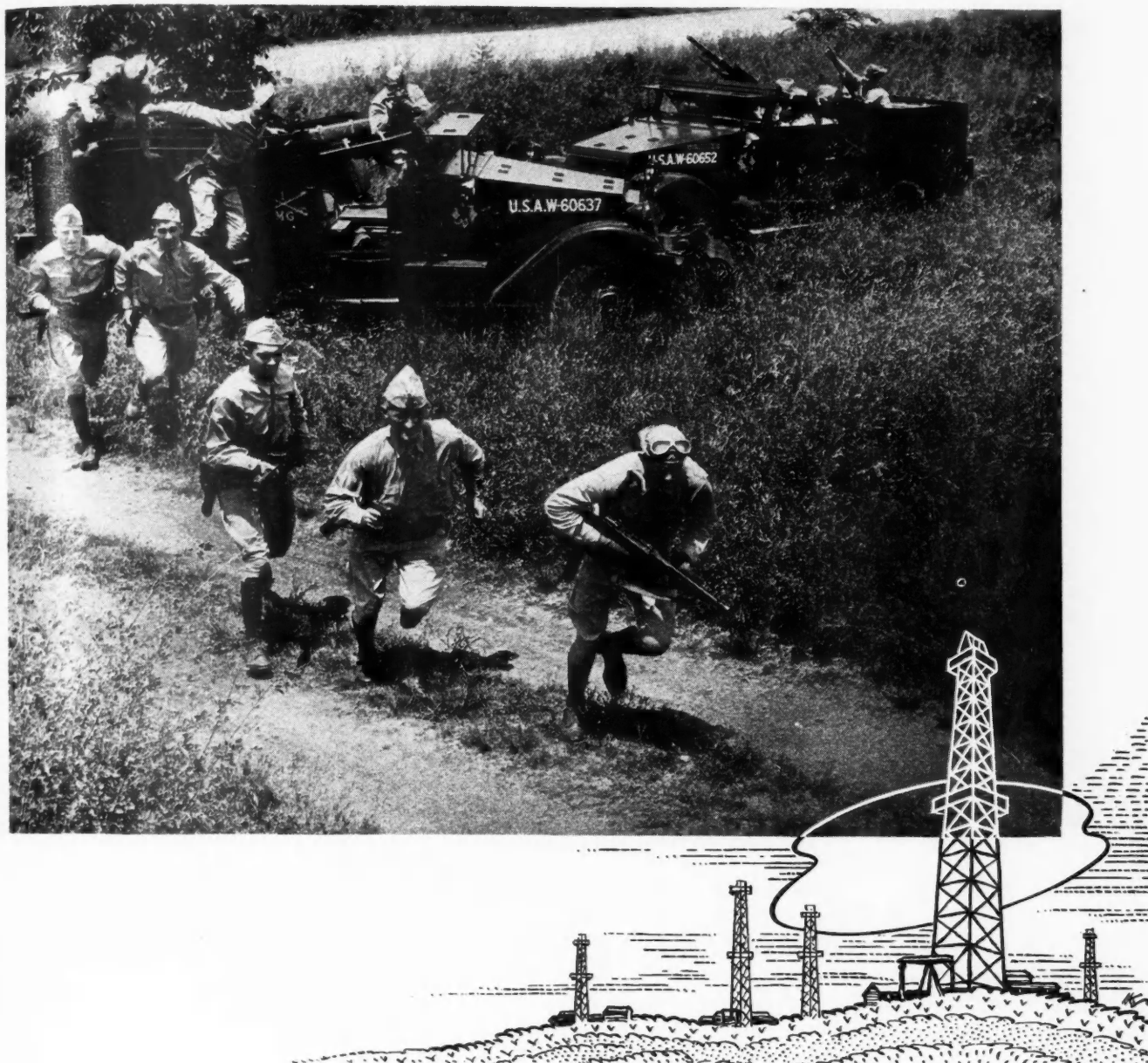
transport has been incorporated in the essential routine of life and provision has been made to meet the attendant need for fuels, lubricants and service.

Changing conditions are not unusual to the petroleum industry. Normally it operates in a continual stage of transition. Wartime requirements of the nation's military establishment possibly would necessitate coordination of the industry's operations and development of systems of refining and transportation peculiarly adapted to the military service. There is no reason to suppose, however, that this industry with its present vast capacity would fail to meet

the simultaneous requirements of the military and of the civilian population.

On a smaller scale the industry annually faces a not greatly dissimilar problem. Each year several million new model motor cars, trucks, buses and engines go into service. The older models continue to operate. The industry regards as routine the job of satisfying both the new and frequently different demands of the latest models, and the fuel, lubricant and service requirements of the old.

The present conflict in Europe permits of comparison of peacetime and wartime needs for petroleum products. It is estimated that the opera-



tion of an air fleet of 2400 bombers and 1600 pursuit planes involves a daily consumption of around 2,250,000 gal. of gasoline. This figure seems to indicate a huge amount of gasoline, yet it is only a fraction of the 60,000,000 gal. which the petroleum industry of the United States handles every 24 hr. If such an air fleet operated daily for a full year the total consumption would be scarcely more than 4 per cent of the American petroleum industry's peacetime output.

The argument fairly may be made that the gasoline requirements of air forces are for different, and higher quality, types of fuels than ordinarily

are used in motor vehicles. The answer is that the argument is absolutely true, but that the United States already has the only really adequate supply of aviation gasoline in the world. Also within the past few years the American petroleum industry has developed several new and more efficient processes for the manufacture of aviation fuel, new processes are being developed and new equipment installed at a rate which already has made possible a 300 per cent increase in output within one year.

Discussion of the necessity for taking steps to make the United States prepared for any war emergency has

tended to divert attention from the remarkable growth in the service capacities of the American petroleum industry since the first World War. To appreciate this 23-year growth it is necessary to recall that there are now twice as many oil wells as in 1917, that new wells can be drilled and completed in one-fifth the time, and that the industry's annual output of crude oil is about three and one-half times as great. Proven reserves are estimated to be three times those of 1917, with new producing fields being discovered and old fields being restored to production by methods unknown 20 years ago.

(TURN TO PAGE 86, PLEASE)

ON Sept. 16, 1939, long before big guns started hurling shells across the English Channel and bombs began bursting over London, British truck operators knew they were in a war. On that fateful day gasoline and diesel fuel rationing by the government was begun.

Regardless of the necessity of this step one of the first results was the gradual disappearance of garages and repair shops from along the highways. Since the rationing cut drastically the amount of fuel for pleasure driving or driving for personal reasons many of the passenger cars disappeared from the highways. The rationing system did not permit garage men to sell motor fuel and with the disappearance of the passenger car from the highways and the elimination of the profit from dispensing gasoline, the repair shops folded up and went out of business.

But before the disappearance of garages, which had been used for routine or emergency purposes, could become a serious matter, we must assume that the truck operator could get enough fuel to get his trucks out of the terminal and onto the highway. To do this the operators had to fill out tons of forms and questionnaires for the Ministry of Transport.

When all of the commas were anchored and the T's securely crossed, the operators found that the ration to which they were entitled ran something like this:

For every truck weighing $\frac{1}{2}$ ton unloaded—3 units of fuel per week (A unit is $\frac{2}{3}$ gal. of diesel fuel or 1 gal. of gasoline);

For every truck weighing 1 ton unloaded—6 units of fuel per week;

For every truck weighing $1\frac{1}{2}$ tons unloaded—9 units of fuel per week;

For every truck weighing 2 tons unloaded—12 units of fuel per week;

For every truck weighing $2\frac{1}{2}$ tons unloaded—15 units of fuel per week;

For every truck weighing 3 tons unloaded—18 units of fuel per week;

For every truck weighing 4 tons unloaded—24 units of fuel per week;



WAR IS HELL

British fleet operators are finding that fuel rations, restrictions and railroad-dictated regulations are almost as dangerous as the more highly advertised enemy



For each additional ton of unloaded weight—6 units of fuel per week up to a maximum of 11 tons.

Presumably the British trucking magazines have a pretty good line on operating conditions within England and their guess should be as good as any regarding what can be done with the fuel allotted by this scheme. They agree that the fuel ration will permit

a truck to operate a maximum of $1\frac{1}{2}$ days per week and that one truck can work continuously for every three kept in the garage.

Perhaps it might occur to some bold opportunist that the thing to do is arrange for the fuel allowance and then cut the fleet to match conditions by selling the idle trucks. It is not so easy as all that. For every truck



ceed one-sixth of the basic allowance. In the case of a truck weighing 1 ton this would be 1 gal. per week. If this allowance does not satisfy the operator he can again fill out forms and take them to his district transport officer. There are 55 such district officers in all of the British Isles, which will give an idea of how hard it may be to get any attention. If the operator survives the district officer and still is not satisfied he may apply to the Regional Commissioners after filling out appropriate additional forms.

His chances of getting more fuel rest on the nature of the hauling in which his vehicles are engaged. The "essential" services are favored but nowhere can be found a definition of "essential."

Truck operators long subject to severe restriction by a Ministry of Transport with a definite railroad bias have been classified by the commodities which they carry. If a truck operator specialized in hauling a product which is adjudged non-essential, he may be put out of business by the fuel rationing. He is not permitted to change his cargoes to something which may be considered essential even though he may be able to get the business and there is a crying need for some operator to perform this service.

The result of all of this has been a reduction in the number of trucks registered in February of this year from the registrations of June, 1938, of more than 11 per cent, amounting to some 55,000 trucks. Thus when Britain needs fast, flexible transportation more than she ever needed it in her career, she finds that mal-administration and restrictive legislation have cut the one agency able to supply this need by more than 10 per cent.

It may be charged that since England has to import all of her liquid fuel there may be a shortage and that all of the fuel restrictions may be necessary. In order to prevent any

(TURN TO PAGE 108, PLEASE)

that is disposed of, the fuel ration is cut accordingly. The fuel ration is maintained on the basis of trucks owned and operated. It is unlawful to obtain fuel under the rationing plan and then sell it or give it away.

It is possible for the truck operator to apply for supplementary fuel but no one seems willing to venture an opinion on what his chances of

getting it are after he has applied. There apparently is no formula for distribution of supplementary rations. It seems to rest entirely upon the whim of various bureaucrats. To apply, more forms must be filled out and then at the discretion of the local sub-district manager of the Ministry of Transport the operator may be issued supplementary fuel not to ex-



EACH year COMMERCIAL CAR JOURNAL gets the various chief engineers together on these pages for the purpose of discussing truck design of the future. In order to encourage frank participation in our round table discussion the contributors are masked, so to speak—that is, no engineer is identified with his contribution. In the course of this discussion a difference of opinion may confuse the reader who may expect a clear-cut trend. This difference of opinion expresses the fact that there is no trend or, if there is, no one can be sure of it. Where our truck designers agree, it would seem that the trend is pretty well defined.

The first question thrown on the table is, "What are the chances of tires being manufactured in sizes based on gross vehicle weight increments and what effect would they have on design?"

With one exception our contributing engineers showed such a complete lack of enthusiasm in answering the question that we must come to the conclusion that it does not interest them. The one exception has this to say: "From the standpoint of the influence of such a development upon the trucks themselves, there is no question that it would greatly simplify the design and production of motor vehicles and result in far less abuse and misapplication on the part of operators."

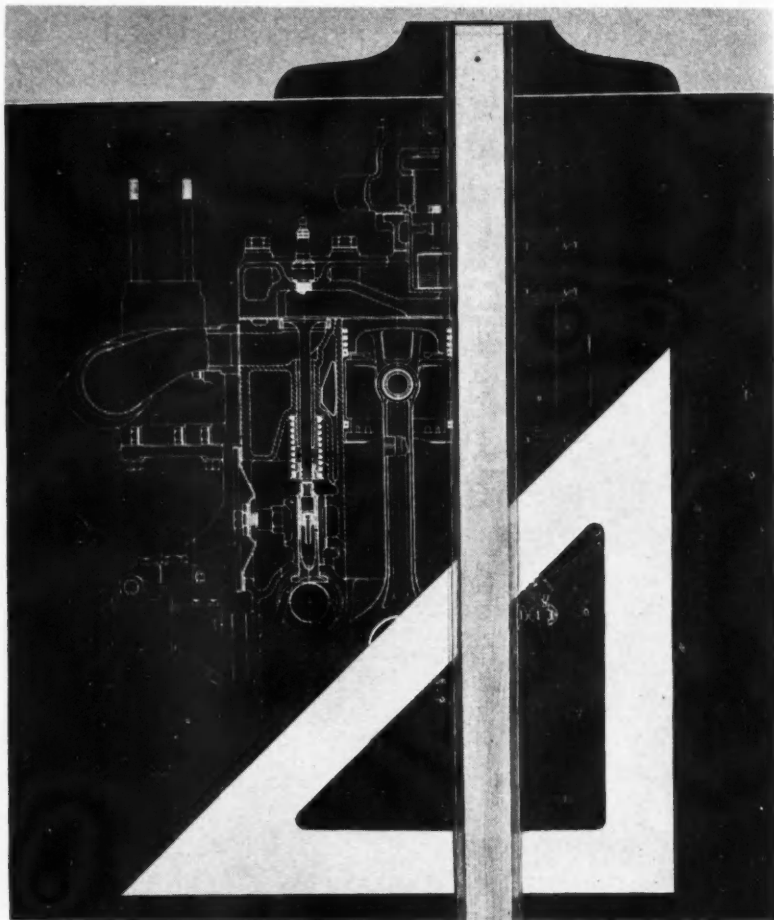
None of the others spend any energy opposing the idea. Their collective opinion might be summed up by saying, "Any such move appears to be in the distant future and when it comes, if it does, it will have no material effect on truck design." Perhaps one opinion is a little more expressive. It is: "While the desirability of a reduction in the number of standard tire sizes is generally recognized by both truck and tire manufacturers, it is highly questionable whether any great change from the present situation would prove practical, since trucks are now and will continue to be manufactured in almost infinite variety, to meet users' widely divergent requirements."

Our next question was posed with the national preparedness program in mind. Thus: "Will the national defense program have any effect on commercial units such as greater in-

terchangeability of parts or component units in various models?"

Half of our experts say that while the military services must have interchangeability, it can have no place in

commercial design because it costs too much, since it is always necessary to use the most expensive part in any design. The competitive situation forbids this practice.



ENGINEERING FORECAST

Factory engineers give their ideas on seven questions that probe future of truck design

by HENRY JENNINGS

Technical Editor, Commercial Car Journal

Entirely aside from competitive angles, one engineer uses the cooling system as an example. He says, "Attempts are now being made to standardize fan size, blade diameter, widths, etc., water pipe sizes, etc. These details must be worked out to suit each individual vehicle and the same arrangement cannot be expected to function satisfactorily for a number of different models."

The engineers who believe that some interchangeability will result in commercial models as a result of lessons learned from military production, caution us not to expect it to go too far. One of them says: "For example, the army might well adopt a single standard size of radiator cap, gasoline tank cap, radiator and gasoline tank drain plugs, cab door handles, etc. Radiator hose sizes might be reduced to a few sizes; interchangeability of brake lines, greater standardization of chassis lubrication fittings, etc., all of which could well be imitated by the commercial industry."

Another expresses the idea that the interchangeability will be negligible, but it will be the subject of a more careful study by the individual manufacturer.

Our third question: "Will engine operating control be given more attention and, if so, what means will be used to control it?" created a spurious division of opinion. The heavy-duty designers lined up unanimously behind the first part of the question with an emphatic, "Sure," while the designers of smaller trucks could not see it that way. One of the engineers who is not excited about improvements in temperature control simply says that he sees no necessity for giving more attention to temperature, while another states that he thinks there will be only minor improvements in thermostats.

On the affirmative side we find these opinions: "Undoubtedly continuing attention will be given to the matter of engine operating temperatures but what methods of securing this control will make their appearance in the near future I cannot say."

"Engine operating temperature control will be given more exacting attention because of its effect upon life, performance and economy. It will include not only water-jacket and oil temperatures but also the

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COMMERCIAL CAR JOURNAL'S FIFTH ANNUAL TRUCK SHOW

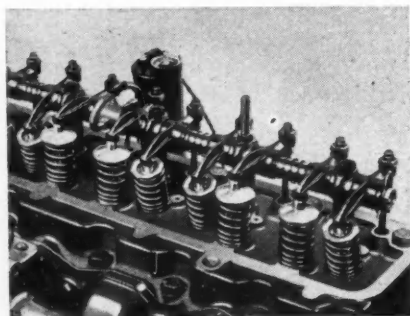


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CHEVROLET FOR '41



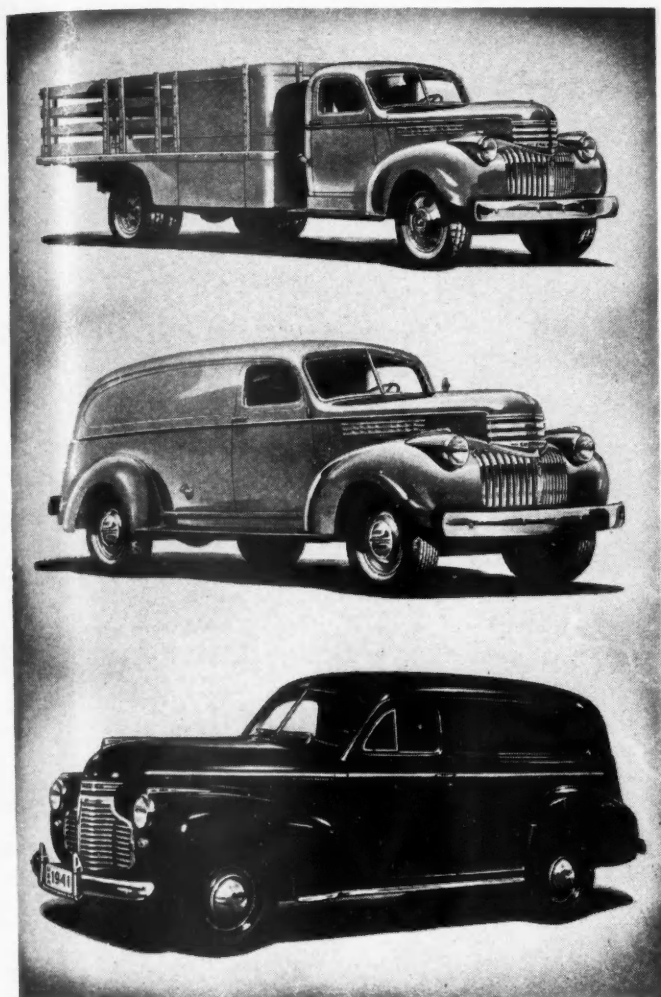
Spring covers on intake valves shed oil from stems, reduce consumption



IN addition to new front-end appearance and numerous refinements and improvements in its entire truck and commercial car line, Chevrolet has added an oversize engine for use in the heavy-duty trucks. The output of the standard engine, which has an unchanged bore of $3\frac{1}{2}$ in. and $3\frac{3}{4}$ -in. stroke, and piston displacement of 216 cu. in., has been increased from 78 hp. to 90 hp., with an increase in torque to 174 lb.-ft.

The oversize engine has a $3\frac{9}{16}$ -in. bore and a $3\frac{15}{16}$ -in. stroke, giving 235 cu. in. piston displacement. This results in a maximum torque increase of 18 lb.-ft. to 192 lb.-ft. The engine block is $\frac{1}{8}$ -in. higher and piston assemblies and crankshafts are different. Except for these differences, the engines are identical mechanically and are interchangeable as units.

The truck line spans the light delivery, $\frac{3}{4}$ -ton, $134\frac{1}{2}$ -in. wheelbase



Far left: A $\frac{3}{4}$ -ton model serves to illustrate the new front-end styling

Left, top to bottom: Heavy-duty deluxe stake body on 160-in.-wheelbase, $1\frac{1}{2}$ -ton chassis; the light-delivery panel unit on 115-in.-wheelbase, $\frac{1}{2}$ -ton chassis, and sedan delivery available on Master Deluxe series only

Offers choice of new over-size engine or stepped-up standard unit. All models have new advanced styling

$\frac{3}{4}$ -ton and heavy-duty fields, both conventional and cab-over-engine models being offered in the heavy-duty series. Through cooperation with various special equipment manufacturers, vehicles are available for the widest possible range of specialized needs.

Standard equipment in all trucks is an improved six-cylinder valve-in-head truck engine. Output has been stepped up, from 78 to 90 hp., without increasing piston displacement,

and hence without affecting the economy characteristics. Maximum torque is increased to 174 lb.-ft. Bore and stroke remain respectively $3\frac{1}{2}$ and $3\frac{3}{4}$ in., displacement being 216.5 cu. in. Combustion chamber shape has been modified to increase compression ratio from 6.25-1 to 6.50-1. The pistons, of cast alloy iron, with slipper skirt, are electroplated with tin and have diamond-bore finished bushings.

The roof of the combustion cham-

ber surrounding the intake valve has been flattened, lowered, and machined flush with the bottom of the cylinder head, to give higher turbulence and permit operation on a leaner fuel mixture. Better detonation characteristics, and a cooler piston head, are obtained by substituting flat type head for the crown type formerly used.

Several revisions have been made for better cooling in conjunction with the engine's higher power. Water jackets within the cylinder head extend between the combustion chambers. Two outlets are now incorporated from the water pump to the block, one located on each side of the cylinder bores, to equalize cooling. Radiator core size is unchanged, but the core has more copper fins per unit of area. Better air-flow conditions and quieter fan operation are obtained by moving the fan slightly forward.

To meet the requirements of high compression, a new ignition system of heavy-duty capacity is provided. Changes apply to ignition coil, condenser, spark plugs and distributor, an especially ingenious innovation being introduced in the circuit of the last-named unit.

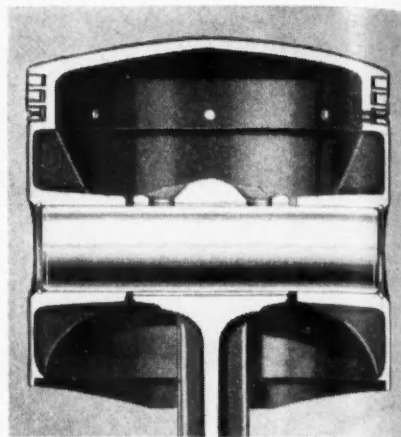
Breaker points now operate at higher efficiency indefinitely. Their longer life results from a reversing switch located at the starter, to reverse the polarity of the ignition current each time the starter is used. This equalizes the deposit of metal from one breaker point to the other, keeping the points permanently flat. The angle on the distributor cam is increased to accelerate the operating speed of the breaker points and minimize tendency to arc at low speeds.

The new coil has considerably higher output. Voltage at spark plugs is increased 10 to 15 per cent. A large porcelain insulator replaces the

(TURN TO PAGE 116, PLEASE)



Above: Newly-styled 101-in. COE stake. Below: (left) Stake body on 158-in. chassis and dump body on 134-in. chassis



Cast steel pistons of the new 4-cyl. engine expand at approximately same rate as cylinders; are fitted closely

FORD FOR '41

Introduces a new four-cylinder economy engine and makes mechanical and style changes throughout line

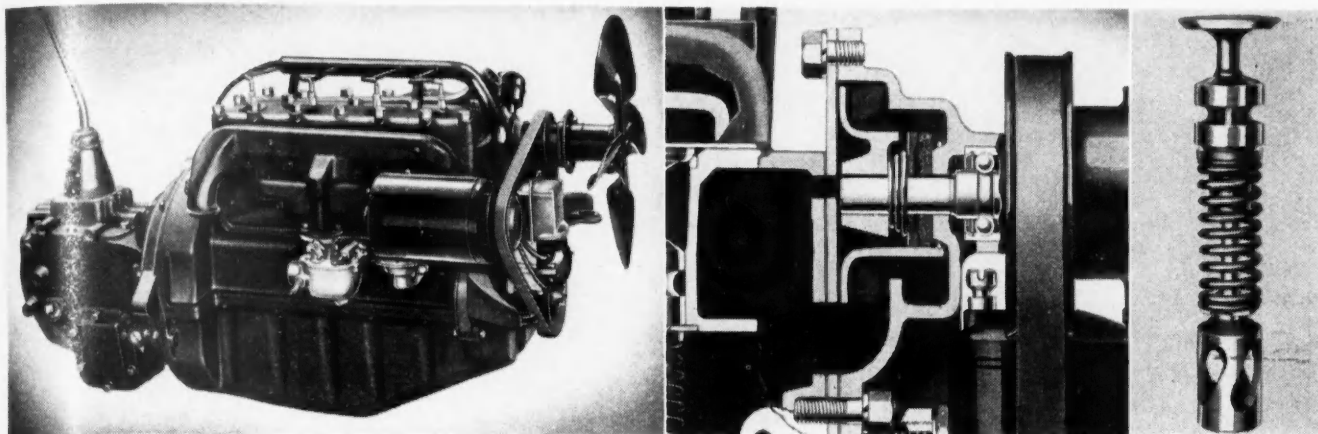


MOST important change in the Ford line of trucks and commercial cars for 1941 is the introduction of the new four-cylinder economy engine which is optional in the light commercial units and the multi-stop cars.

It is a 30-hp., four-cylinder L-head engine with a bore of 3 3/16 in. and a stroke of 3 3/4 in. The output is 30 hp. at 2800 r.p.m. and the maximum torque is 84 lb. ft. at 1000 r.p.m. An oil bath air cleaner is used with this engine as well as an oil filter.

Pistons are a light cast alloy with full floating piston pins. All valve seats have tungsten inserts. The packless water pump has a double row pre-lubricated bearing. Crankshaft is fully counterbalanced. It weighs 41 lb. and is supported by three main bearings that have an area of 34.4 sq. in. The engine has an oil capacity of 6 qt. Bearings are of a replaceable type. All bearings and





The new 4-cyl. engine develops 30 hp. at 2800 r.p.m. It is optional on the light commercial and multi-stop units

Shaft of self-sealing packless water pump on new engine is mounted on double row pre-lubricated ball bearing

Valve, guide, spring and retainer (far right) are installed as unit to facilitate removal and replacement

timing gears are pressure lubricated.

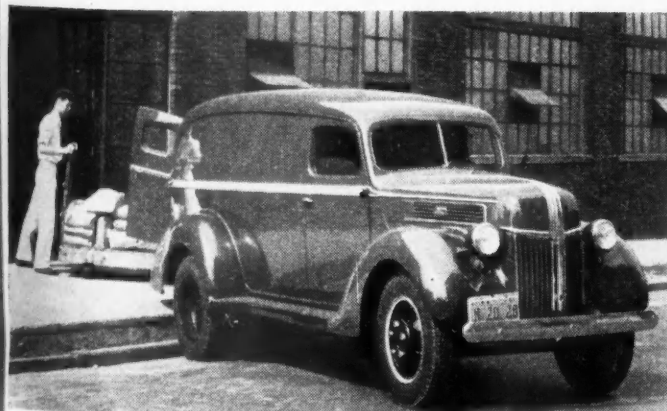
As last year, Ford will offer a line of commercial units on 112-in. wheelbase, conventional $\frac{3}{4}$ -ton and 1-ton trucks on 122-in. wheelbase, and the line of heavy-duty conventional or regular trucks and COE models. In all, there will be 42 combinations of bodies and chassis, as before.

The 60-hp. V-8 has been abandoned. Conventional and COE models will have the 85-hp. V-8 as standard equipment; the 95-hp. V-8 optional.

Styling has been modified on the regular truck models while the front end of the COE jobs has been altered to resemble the new styling on conventional models. Front-end styling on commercial units now resembles the styling on the heavy-duty line, and the styling on the sedan delivery job has been changed in the same fashion.

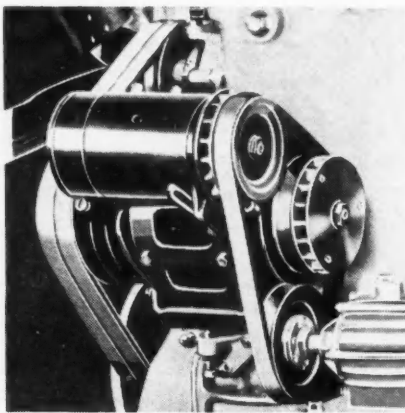
Wheelbase options on the regular
(TURN TO PAGE 158, PLEASE)

Directly below: A 122-in. wheelbase chassis equipped with standard express body and 85 hp. engine. Next: The sedan delivery commercial car furnished with either 85 or 30 hp. engine. At bottom of page: a 134 in. panel (85 hp. engine is supplied) and a standard commercial car panel delivery. All trucks on opposite page are equipped with 95 hp. engine.





A metal-edge fuel filter is mounted at the carburetor on all gas engines



Diesel engine has both 24 and 6-volt generators for starting and lighting



An effective oil bath air cleaner is now standard equipment on all models



A LARGE number of chassis and engine refinements, including a greater selection of optional wheelbases and unit assemblies, mark the Dodge line of newly-styled trucks for 1941.

There are 112 standard chassis and body models (an increase of 16 models since the outset of 1940) on 18 different wheelbase lengths and in 6 capacities ranging from one-half ton commercial units to heavy-duty gasoline and diesel-powered freight haulers.

The impressive trimness and sturdiness of each model, from the chrome-finished radiator grill ornamentation and louvers, through every line of the cab and fenders, characterizes the up-to-date appearance of these new trucks.

"Sealed-beam" headlights mounted in pockets formed in the front fenders, and new style parking lights mounted on the cowl contribute to streamlined appearance.

Indicating the increasing importance attached to appearance of modern transportation equipment is the fact that the new 1/2, 3/4 and 1-ton Dodge trucks are available in a score or more of two-tone color combinations at no extra cost.

Among the advancements designed to prolong the life and dependable performance of all models are an oil bath air cleaner and a metal-edge fuel filter mounted at the carburetor. The latter is in addition to the screen-type filter incorporated in the fuel pump.

DODGE FOR '41

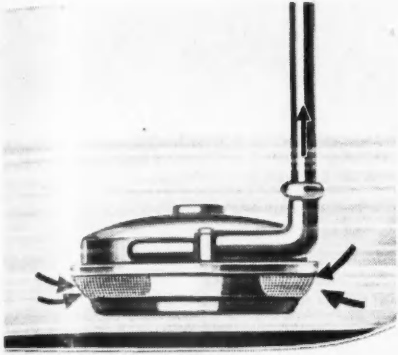
Announces 112 standard models with six different engines and vast array of chassis and engine refinements

A floating-type oil pump screen improves the efficiency of oil pumps. The hinged intake screen floats just below the surface of the oil in the crankcase, following the rise and fall of the oil level. Thus oil is never drawn directly to the oil pump from the surface of the reservoir, which is apt to be frothy or foamy during engine operation, or from the bottom of the crankcase where sediment may settle.

In all models, six-cylinder high compression engine is retained. Well established features that play an important part in the economical, dependable and capable performance

of the trucks are: aluminum alloy, lubricated multi-ring pistons, exhaust valve-seat inserts, full-length water jackets, by-pass thermostat, replaceable, precision-type main and connecting rod bearings, full-pressure engine lubrication, chain-driven camshaft and air-cooled generator.

Contributing to driver convenience and performance in all 1/2-ton, 3/4-ton and 1-ton 1941 models is a new synchromesh transmission, which minimizes the possibility of gear clashing and reduces wear. Horsepower and torque in each of these models is increased by use of a new high-lift camshaft.



New floating oil pump screen intakes below surface, yet well off bottom

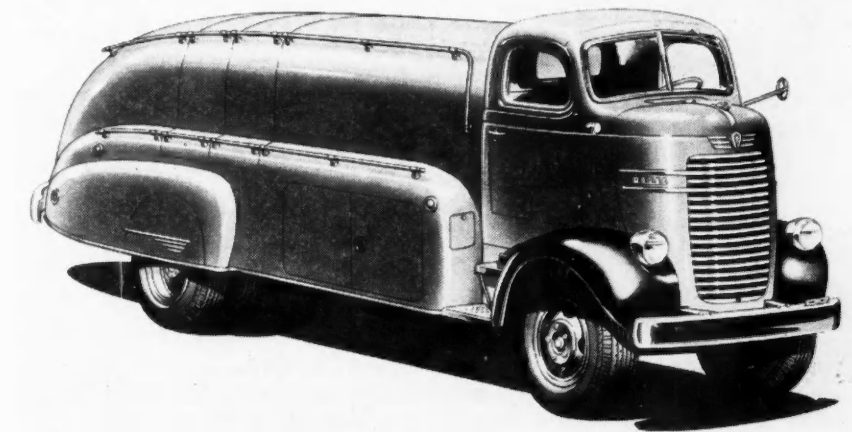
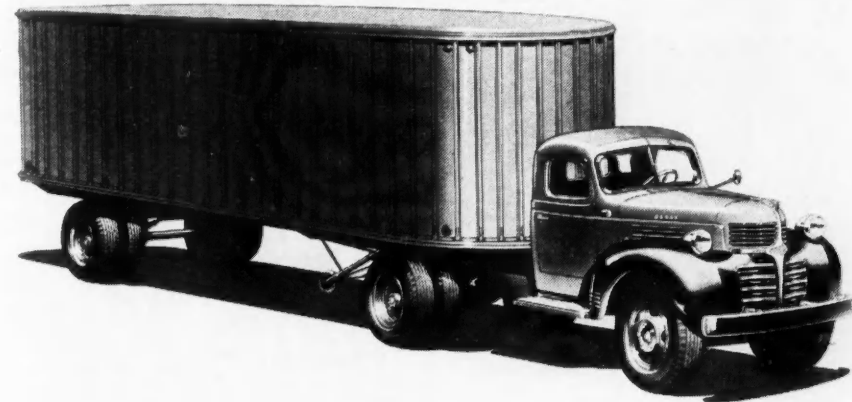
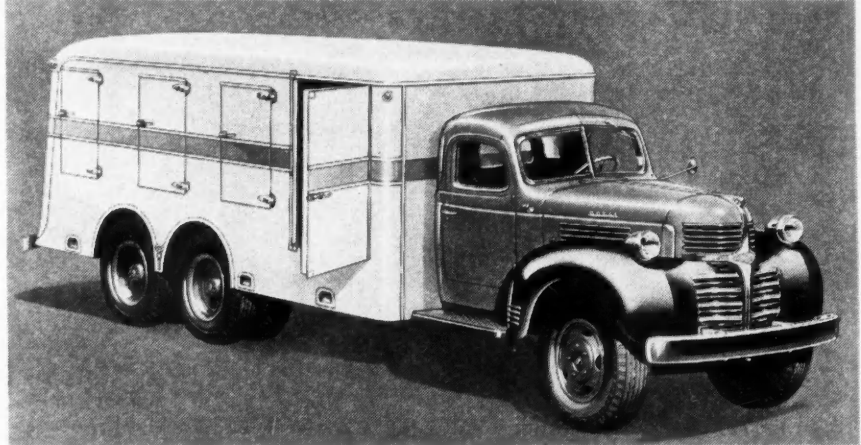
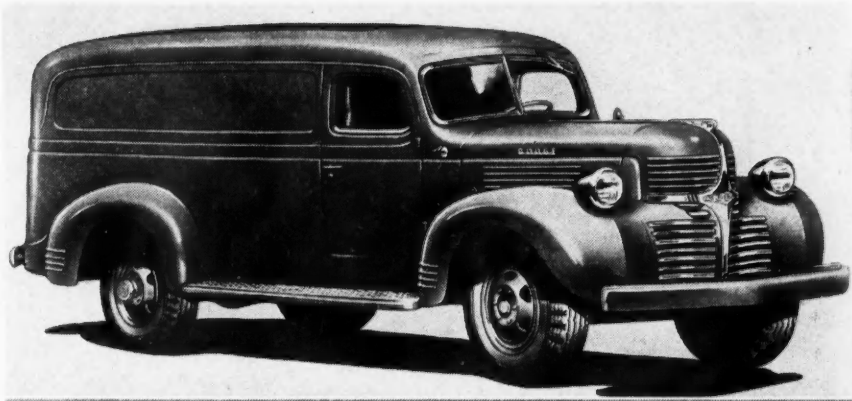
An important improvement offered as standard equipment on all one-ton models will be a full-floating type rear axle with a one-piece housing. Sixteen-in. six-stud wheels will be standard equipment on this model, with 20-in. wheels available as extra equipment. One-ton models with stake, platform, panel and pickup bodies are now offered with dual rear wheel equipment available. With dual-wheel equipment, stake and platform bodies have an additional width of 6 in.

An important change in the new Dodge provides a 1½-ton model with 60-in. CA dimension. This truck has a wheelbase of 135 5/16 in. and replaces a former 133-in. wheelbase model. An additional axle ratio of 6.833 is also available on 1½-ton models.

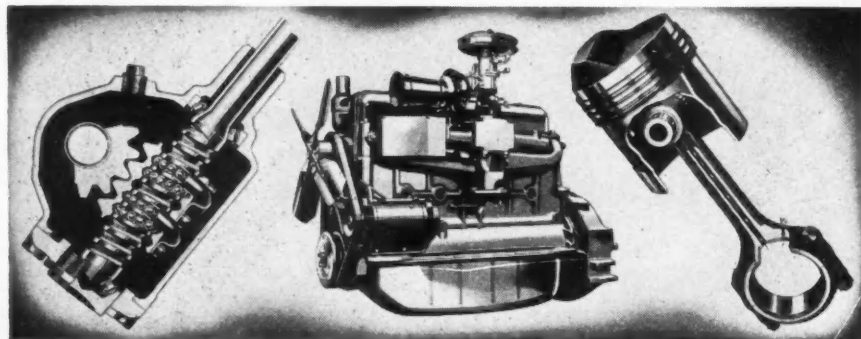
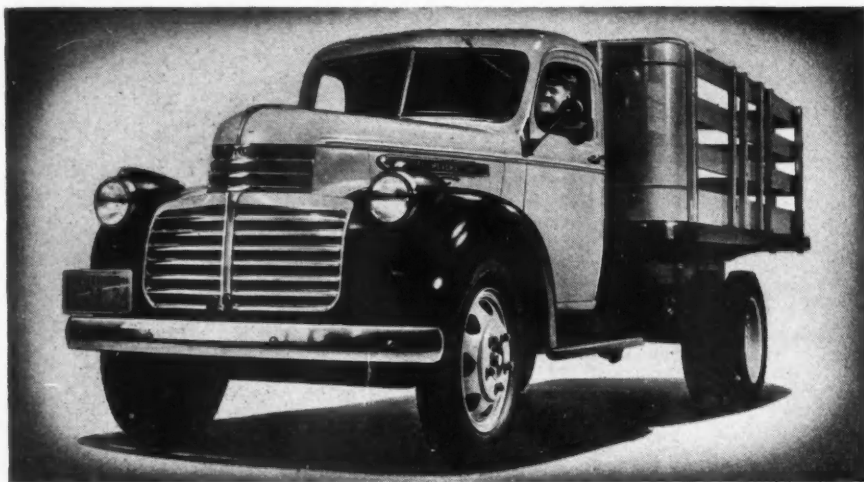
New-style tires with a flatter and thicker tread, greatly increasing contact area with the road are provided as standard equipment on the new 1½-ton, two and heavy-duty gas-powered models as well as on diesel-powered trucks. Studs instead of screws are used to fasten the rear axle drive-shaft flange to the hub on 1½ and 2-ton models.

To facilitate handling of heavy-duty models, both gas and diesel-powered, a new 10-in. booster-brake cylinder, which reduces the amount of foot pressure required for brake application, and a 19-in. diameter steering wheel, which gives greater

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Typical Dodge "Job-Rated" trucks for '41 are, from top to bottom: the 1-ton panel delivery, 133-in. wheelbase; a 2-ton tandem-axle model with special ice cream body, 160-in. wheelbase; a 2-ton tractor, 136-in. wheelbase, and the 2-ton COE chassis, shown here with special tank body, 129-in. wheelbase



Top: The 1½-ton GMC stake demonstrates new front-end styling featured on ½ to 2-ton models. Above, left to right: New recirculating ball-bearing type steering gear, the modified 228 cu. in. economy engine with smaller intake manifold, and Turbo-Top four-ring piston made of heat-treated aluminum alloy.

GMC FOR '41

Restyles its smaller models and adds new engineering features, including a new economy engine



NEW appearance on all models up to and including the 2-ton size, a new steering gear on these same models and an economy engine are features that have been added to the General Motors Truck line for 1941.

Fenders are more massive in the new styling and they come up higher

at the hood, meeting the short hood panels at right angles. A new fender grille which has seven wide horizontal bars is formed in a slight V from the center of the radiator molding. Above the fender grille is a narrower and shorter radiator grille fairing into the lines of a short radiator shell. The hood lid panel is shallow. It

rests on the upper radiator grille.

The steering gear is of the recirculating ball bearing type formerly used on the GMC heavy-duty models. It reduces the steering effort by 57 per cent.

Cabs have been made more comfortable by providing more leg room and seat cushions have new calibrated hour glass springs.

The output of both the 248-cu. in. engine and the 228-cu. in. engine has been increased. The 248 engine now produces a maximum horsepower of 97 while the 228 has been stepped up to 87. In each case the increase is about 10 per cent.

Both of these engines have redesigned combustion chambers, the lower half of which is formed by the top of the piston. The new piston is described as a Turbo Top piston. The characteristics of its top side are such that it provides a high turbulence in the combustion chamber.

On this piston are two new rings. The new top ring has a pocket behind it formed by an angle cut. Compression behind the ring holds it in the expanded position, eliminating any tendency to flutter. The oil ring has redesigned edges and bigger oil return passages.

Oil consumption is further improved by the addition of an umbrella-like shield over the intake valve, which prevents oil from running down the stems and into the combustion chamber.

The economy engine is a modified 228 engine. It has the same bore and stroke, 3 9/16 in. by 3 13/16 in., but the compression ratio is increased from 6.75 to 7 to 1. The increase is made possible by use of Turbo Top pistons, which are said to produce high turbulence and make premium fuels unnecessary.

A special intake manifold is supplied. It has a smaller diameter to maintain high fuel velocity, which assures good distribution among cylinders at low speeds. A sheet

(TURN TO PAGE 66, PLEASE)

REO SPECIALS



TWO new heavy-duty models powered by a 310 cu. in. engine and design for off-the-highway operation and a new tractor for heavy hauling powered by a 404 cu. in. engine have been announced by Reo Motors Inc.

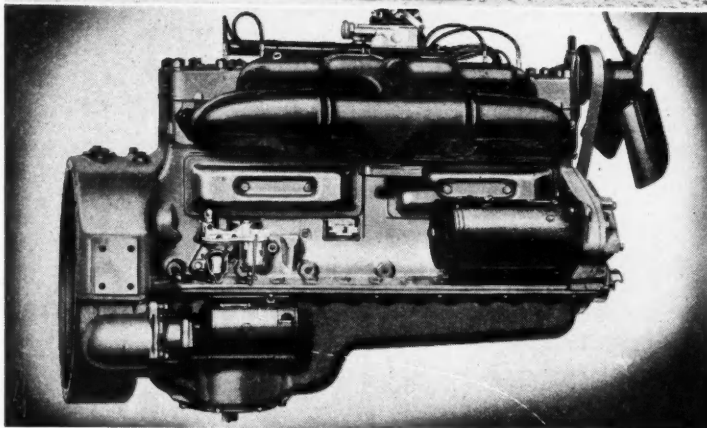
The off-the-highway units of Reo's 1941 line are two "Loggers' Special" heavy-duty chassis with gross tractor ratings of 35,000 to 40,000 lb. Of basic Reo design, these models are engineered to meet the specific needs of logging, oil field operation, and other transportation requiring unusual power and stamina.

The Loggers' Specials are powered by the Gold Crown, 7-bearing engine, 310 cu. in. displacement, developing 234 lb.-ft. of torque at 800 r.p.m. Transmission is four-speed with helical countershaft drive. Auxiliary over and under-drive transmission provides extra power and speed as conditions demand. Chassis frame side rails are 9 x 3 x 1/4 and 9 1/8 x 3 1/16 x 5/16, with reinforcing plates 9 in. x 3/8 in.

The new tractor model especially designed to meet the growing trend toward large motors for high-speed, long haul tractor-trailer operation, is powered by a Waukesha 6MZR, 404 cu. in. gasoline engine. Corresponding to this powerful engine is an exceptionally large radiator to provide extra cooling, 13 in. clutch, special heavy-duty over-drive transmission, exceptionally sturdy tubular driveshaft, with units throughout to sustain the type of performance assured by a powerplant which develops 106 hp. at 2600 r.p.m. Another heavy-duty model, with 517 cu. in. 6SRKR Waukesha engine will shortly be announced by Reo.

Reo design, according to the manufacturer, is particularly advantageous in the operation of these heavy-duty models. The specially designed front axle and shorter wheelbase provide reduced turning radius, adapted to the requirements of loggers, oil field operators, motor carriers, and

Two new models with 310 and 404 cu. in. engines are designed for extra tough hauling requirements



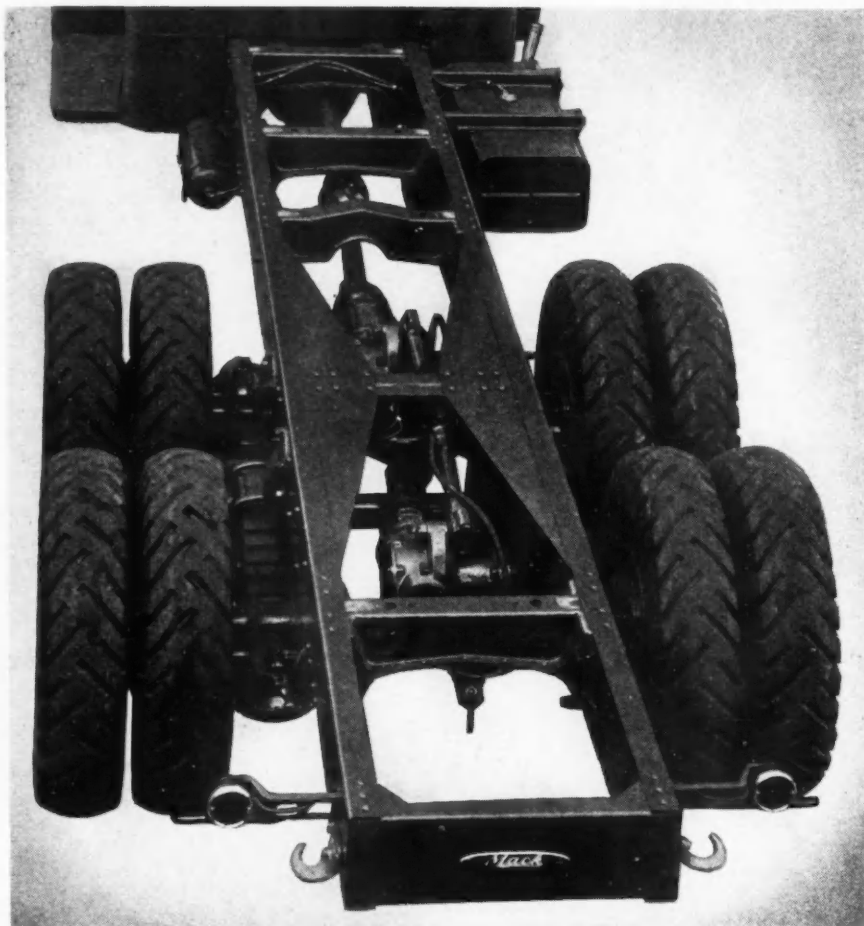
Top: The "Logger's Special." Below: 404 cu. in. Waukesha engine

other forms of heavy hauling, which demand exceptional maneuverability.

Positive vehicle control is provided by internal hydraulic brakes and alloy iron drums. All models, from the heavy duty 2 1/2-ton up, are available with Westinghouse Air Brakes.

Other major features claimed for these Reo models are: an increase of

18 to 20 in. in loading space on shorter wheelbases . . . engine fully rubber mounted, reducing vibration and noise . . . heavy-duty, full floating, double reduction rear axle, with extra heavy shafts and bearings . . . and drop-forged Spoksteel wheels with integral rims, assuring true-running tires and prolonging tire life.



MACK Trucks Inc., has announced the production of a new series of trucks, tractors and six-wheel units designed expressly for heavy hauling. The truck models are the LF and LJ. The tractors are known as LFT, LHT and the LJT. The six-wheelers are the LF, LH and LM. The truck and six-wheel models are offered in a variety of wheelbases while the tractors come in a standard wheelbase with one special wheelbase for sleeper cabs.

In placing these new products on the market, Mack is offering units which represent the most advanced steps in engineering and which combine their sturdiness of construction with the most modern in streamlined styling. From front to rear, all these new models have incorporated a harmonious blending of lines with their rugged and powerful appearance.

The streamlined cabs of the units represent the ultimate in safety and comfort. Of all-metal construction, they have slanting V-type windshields which are two-piece, each part opening independently and being adjustable. Driver's seats are all separate units and fully adjustable with both the seat and back cushions of the new combination spring and rubber foam-type of construction. Covering of seats and back cushions is genuine leather and further de luxe fittings of these cabs include: chromium-plated windshield frames, two intake and two exhaust ventilators, dual windshield wipers, dome light, rear view mirror, felt-lined glove compartment, coat hooks, and headlight beam indicator. Shatterproof glass is, of course, standard throughout these cabs.

The new model LF truck is powered by a six-cylinder model EN 405 Mack Thermodyne engine developing 118 hp. at governed speed of 2500 r.p.m. Torque developed is 300 lb.-ft. at 1000 r.p.m. In place of this engine which is standard, Mack is offering, as an optional extra in the model LF, a six-cylinder model EN

Top: Four-wheel drive bogies of similar design but in different sizes are used on all new six-wheelers. **Next:** Model LFT tractor, available with gasoline or diesel power. **Bottom:** Model LF truck, furnished in several lengths

MACK FOR '41

Adds several new models of trucks, tractors and six-wheelers, all designed expressly for heavy hauling

457 Mack Thermodyne engine which develops 131 hp. at governed speed of 2400 r.p.m. and 338 lb.-ft. of torque at 1100 r.p.m. The model LJ truck is powered by the six-cylinder model EN 457 engine. Available as optional extras in this truck model are the model EO Mack Thermodyne engine developing 142 hp. at governed speed of 2200 r.p.m. and 378 lb.-ft. of torque at 1000 r.p.m., or, if diesel power is desired, the model ED Mack-Lanova diesel engine which develops 131 hp. at governed speed of 2000 r.p.m. and 381.5 lb.-ft. of torque at 1300 r.p.m.

The model LFT Mack tractor is powered by the model EN 457 engine. New model LHT Mack tractor, a unit designed particularly for hauling heavy train loads is powered by the Model EO engine. Optional extra engine installations for this new tractor include the model EP and EY Mack Thermodyne engines developing 160 hp. at governed speed of 2100 r.p.m. and 175 hp. at governed speed of 2000 r.p.m. respectively. Two Mack diesel engines are also available for installation in this tractor model at extra cost, the model ED diesel, and the new model END 605 diesel which develops 144 hp. at governed speed of 2000 r.p.m. and 445 lb.-ft. of torque at 1100 r.p.m. Lastly, the new model LJT Mack trac-

tor is offered with the model EO engine as standard and the model ED diesel as an optional.

Of the new six-wheelers, the new model LF six-wheeler is powered by the model EN 457 engine. The model LH six-wheeler is offered with the model EO as a standard powerplant, the models EP and EY, and the diesel models ED and END 605 diesels being available for this unit at extra cost. The model LM six-wheeler is powered by the EO engine as standard, and as optional extras either the EP or the model ED or END 605 diesels for those desiring diesel power may be installed.

All of the engines powering these new models are of similar design. Crankshafts have seven main bearings, are fully counterbalanced on every throw, and are of drop-forged, case-hardened, low carbon steel. Cylinders are chrome-nickel alloy semi-steel heat-treated and are cast in block with two detachable heads. All crankshafts have a Lanchester-type vibration damper. They are 3½ in. in diameter at the main bearings. The connecting rods are of drop-forged chrome-molybdenum steel with a 35-deg. cap angle. Main bearings of the thin shell precision type are interchangeable. Exhaust valve seats are of Mack's exclusive Permafit inserts of niferrite faced with stellite, and

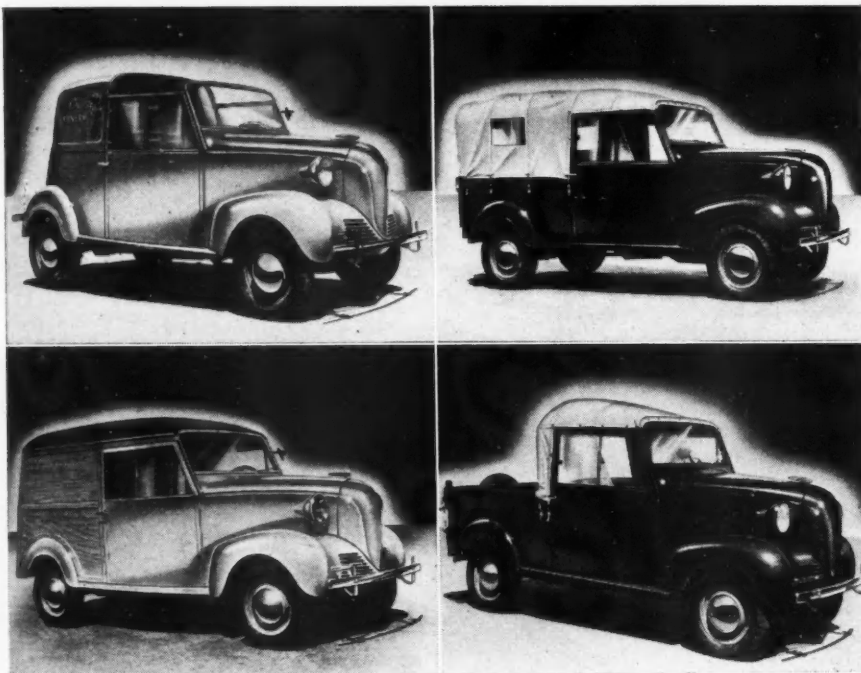
exhaust valves are of Mack's exclusive Stablite material.

Drives in every case are through dry single plate clutches through either 5-speed direct or 5-speed over-gear transmissions. In every case a Mack 10-speed Duplex transmission is available. Final drive on the LF and LJ and on the LFT, LHT and LJT tractors is through dual reduction rear axles. A choice of approximately five rear axle ratios is offered with each model. The rear axle housings on these new truck and tractor models are of pressed steel, heat-treated and fused. Axle shafts are graduated heat-treated and employ involute type of splines. All rear axles are full-floating and employ Hotchkiss drive.

The LF six-wheeler, LH six-wheeler, and LM six-wheeler all use a four-wheel drive bogie of similar design but of different sizes according to each model. The six-wheel bogie is both simple and accessible and is balanced so that the loading of tires is equal under all conditions and so that the braking is even on all four wheels and all wheels contribute their share of driving effort. The design of this bogie has achieved a high degree of stability, flexibility, and compactness. Mack bogies incorporate banjos of ample stiffness, rubber Shock Insulation of the springs, broad distribution of the load over the frame, and extreme simplification of lubrication. They have neither longitudinal nor transverse radius rods and provide full braking power on all four wheels. The six-wheel bogies feature the Mack power divider which produces constant torque without end thrust. This power divider does not depend upon friction, nor is it a ratchet or inertia device. It operates smoothly and steadily at all speeds and loads and endures indefinitely without developing back-lash or losing its partial locking action. It never locks but is worked out to provide a bias of torque for the axle having the best traction, this bias never exceeding the safe capacity of its driving parts while preserving full differential action at all times.

Rear axle housings on these Mack six-wheelers are steel castings, while axle shafts are chrome-nickel steel, graduated heat treated.

(TURN TO PAGE 124, PLEASE)



Top left: Parkway Delivery. Smart appearance; open driving compartment

Lower left: Panel Delivery. Natural maple finish; double doors in rear

Top Right: Covered Wagon. Seats four if desired; top rolls on ridge pole

Lower Right: Pick-up Delivery. Top on driving compartment is removable

CROSLEY FOR '41

Offers seven models beginning at \$299. Commercials rated at 1/4-ton; all said to make 50 miles per gal.



THE Crosley Corp. offers five commercial car models and two passenger car models. As the latter are useful to scores of businesses, such as for use by servicemen, salesmen, messengers, deliverymen, and others, they also serve commercial car purposes.

Crosley trucks are rated as 1/4-ton

jobs, and fill a need where trucks of larger capacities are not required, at a consequent saving in initial as well as operating costs. The cars and trucks are easy to handle, "parks on a dime," and quickly pay for themselves out of savings on gasoline. They operate for less than a cent a mile and go 50 miles on a gallon.

Crosley commercial cars start with the Parkway Delivery, listing at \$375. Continental in design, it makes a smart-looking delivery car that attracts attention.

Next in the line is the Pick-up Delivery, listing at \$385. This is an open body, general delivery, all-purpose truck.

The Covered Wagon, listing at \$399 f.o.b. factory, is the most unusual body style yet created by any automobile manufacturer. It seats four persons comfortably, or, like the Station Wagon, the rear can be quickly converted into carrying space by removing the rear seat. The heavy waterproof canvas top can be quickly rolled up and fastened to the ridge pole to let the "all outdoors" in.

The Panel Delivery, listing at \$435, is a completely enclosed model, paneled in natural maple finish. It is distinctive in design, sturdily constructed, and operates at the same low cost as the passenger cars. Quick in traffic, it parks where larger trucks cannot find room. Contents are accessible through double-door in rear.

The Station Wagon, listing at \$450, is an all-round body style that is sturdy and useful, as well as stylish and smart. Rear seats can be removed for maximum carrying space.

Of great use to salesmen, servicemen, messengers and others who require a car for commercial use that can be quickly and easily parked in congested business areas, are the Crosley Convertible Coupe, listing at \$299, and a Convertible Sedan, at \$349.

Both models provide ample leg room and storage space up to 500 lb., and are ideal for salesmen with samples, etc., who must cover a large territory or congested business district quickly at minimum cost.

The tops can be raised or lowered in a jiffy. The Convertible Sedan seats up to four people comfortably. The three position adjustable seat provides ample leg room. The rear seat may be removed to provide extra storage space, if desired.

MARMON-HERRINGTON

THE Marmon-Herrington line for 1941 extends from the half-ton Ford pick-up, converted to four-wheel drive, right on up through a six-wheel drive job rated at 70,000 lb. gross. In between is a long list of vehicles, all with the all-wheel drive feature, which meet virtually every hauling need with particular emphasis on off-the-highway use where the superior traction of all-wheel-drive gains its most important advantage.

Conventional and cab-over-engine Fords with Marmon-Herrington factory installed conversions are available in all standard Ford size ranges and combine the advantage of all-wheel-drive with the availability of Ford parts and service wherever the units may see service.

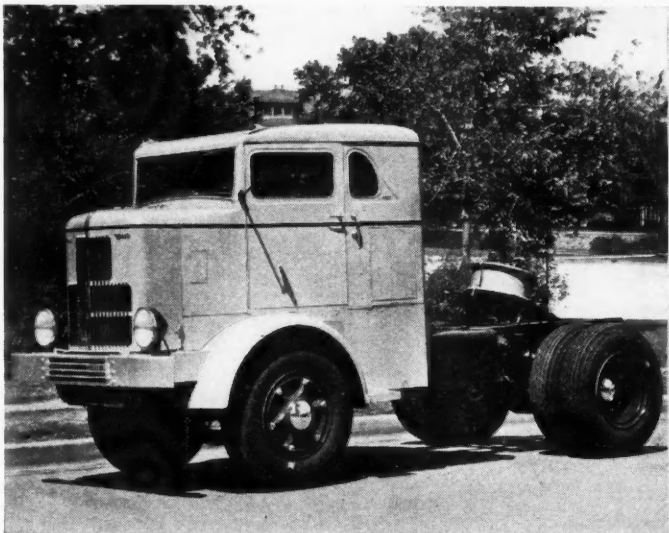
Illustrated at the right are the two extremes in Marmon-Herrington design—the Ford half-ton pick-up together with one of the company's largest units powered with heavy-duty Hercules gasoline or diesel engine.



DART

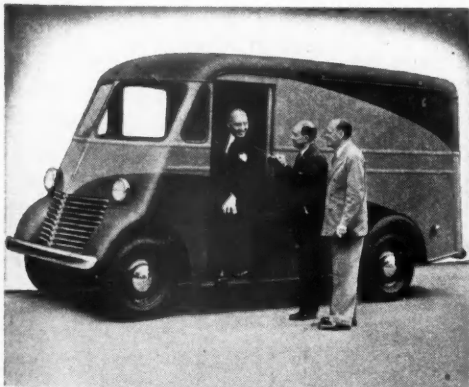
ALTHOUGH the Dart Truck Co. puts most of its effort into specialized heavy-duty designs for off-the-highway uses such as coal mining, airplane refuelling, logging, oil field duty, large construction projects, etc., it also produces heavy-duty equipment for specialized on-the-highway jobs.

An outstanding example of the latter is the Dart Model 60 tractor shown at right, equipped with COE sleeper cab. In addition to its unusual styling, its features include a special Fuller transmission, a 517 cu. in. Waukesha six-cylinder, Model SRKR, gasoline engine, with extra large cooling capacity, and other equipment desirable for sustained high-speed operation.



HUDSON

AVAILABLE



Left: Hudson's new all-purpose package delivery is first of its type to be produced by that company. It has a $\frac{3}{4}$ -ton capacity

Right: The Available, Model X-250, in the $3\frac{1}{2}$ -ton range, is typical of advanced styling on the company's latest units. Tires are 9.00 x 20





The 1941 business coupes shown on these pages are Chevrolet (top), Ford . . .



. . . Nash "600", Willys American . . .

FLEET CARS FOR '41



**Leading car manufacturers vie for
fleet business with stripped mod-
els and special economy packages**

by JOSEPH GESCHELIN

Detroit Technical Editor, Commercial Car Journal



THIS story is for fleetmen exclusively, for fleetmen are the only transportation buyers who will be permitted to take advantage of any special economy options that may be offered by the passenger car producers.

You will recall that CCJ has undertaken each year during the past four or five years to survey the passenger car field, uncover the special features that may be available for economy fleet operations, more particularly in the province of the business coupes so popular as salesmen's cars, supervisor's equipment, and so on.

In certain aspects of fleet operations, economy of fuel and oil and wear and tear outweighs completely the elements of high performance, speed and getaway. And only the trained mind of the large fleet operator can appreciate the advantages, on the one hand, and the disadvantages, on the other hand, of a deliberate sacrifice of the performance built into passenger cars.



... Plymouth and Studebaker Champion. Descriptive details are given in text

In appraising this field, we have selected for study, six of the lowest-priced makes on the market on the assumption that economy also comprehends the lowest possible first cost within a limited field of choice. Several of these makes emphasize economy to an extent that no further changes in standard set up are anticipated. Three of the makes characteristically and consistently offer special economy options.

The specific makes of cars noted in this study are—Chevrolet, Ford, Plymouth, Studebaker Champion, the new small Nash Ambassador 600 and the Willys Americar.

A cautionary note is sounded by Plymouth to prospective buyers of economy vehicles which may well apply to all—"Caution should be exercised in the adoption of our economy groups when considering operation in hilly or mountainous country, or under traffic conditions where rapid acceleration is required. Under such conditions, the restricted engine power available may necessitate ex-

cessive operation in low and second gear, thus offsetting the economies otherwise expected."

Now for the details of the six makes of cars under consideration.

CHEVROLET

Lowest priced business coupe in the 1941 Chevrolet line is the Master DeLuxe model with a wheelbase of 116 in. The car is longer, wider and lower without affecting road clearance, with rear tread increased to 60 in., providing better stability.

Although the engine remains unchanged in specification details, output has been stepped up to 90 hp. by redesigning the combustion chamber and piston, with 10 mm. plugs as standard equipment. The ignition system has been stepped up in capacity, with a larger coil and condenser, and with the introduction of a polarity reversing switch. To effect maximum economy with standard carburetion and manifolding, automatic spark advance is increased while vacuum advance is upped from 17 to 20 deg.

All models have vacuum power shift and running boards have disappeared from all models.

Now for the special options for the fleetman:

First of all, let's take the engine. The economy group includes a special carburetor with a restricted metering system throughout, including a smaller venturi. The standard setting takes a venturi of $1\frac{7}{32}$ in. diameter, whereas the special setting has a venturi of $1\frac{1}{16}$ in. diameter. In addition, there is a new accelerator linkage rod which restricts the throttle opening to about half throttle.

With this option, also comes a special thermostat adjusted to open between 156-165 deg. F., and full open at 185 deg. F. This provides better heat control for restricted operation, further enhancing fuel economy possibilities.

Option two is for those who want still further economy—just about the practical limit. This includes an optional economy hypoid axle ratio of 3.73 to 1, to supplement the economy engine. Standard axle ratio is 4.11 to 1. However, the optional axle involves some additional complications which must be taken into account. First of all, it takes a larger diameter fan to assure adequate circulation in the cooling system. Secondly, it requires a change in the standard transmission set-up due to a different speedometer take-off gear reduction. This, naturally, involves the installation of a new speedometer head on the instrument panel.

So in considering Chevrolet, you can have the economy engine with the standard axle and standard set-up, or the economy engine coupled with the economy axle and its incident equipment changes.

FORD

The Ford Motor Co. has done what fleetmen have long desired in their fleet cars. It has taken the standard Ford coupe, Tudor and Fordor models, stripped them of so-called "frills" and offered them to fleets at reduced prices. The models will be "Specials."

Fleetmen will doubtless look upon this as an historical event. It must be classed as historical because heretofore the belief has been dominant that mass production methods compel manufacturers to build vehicles to meet the tastes of the general public. (TURN TO PAGE 162, PLEASE)

BODIES

BODY MATERIALS & BODY EQUIPMENT



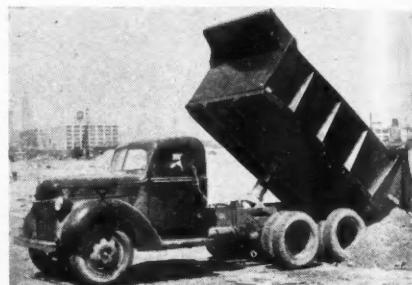
FLEET-DESIGNED and fleet-built bodies take their place along with the products of the professional builders in this year's collection of outstanding body designs. Some are prefabricated bodies; many are individually tailored to do specific jobs including heavy off-the-road service; still more have had special attention from the beauty doctor in the form of scientific color treatment.

On these and other pages, you'll find such unusual jobs as the newspaper truck at lower right, designed and built by the paper's own shop to meet the specific need for providing greater safety for "jumpers" whose profession depends on getting off and on the rear platform hundreds

of times a day. You'll find many types of refrigerated bodies, the "innards" of which are discussed in detail in another article. There's a traveling grocery store, a loud-speaker advertising truck, and a specially built display truck whose entire side rolls into the roof. There are street flushers and dumpers and big oil tankers. There are package delivery units, huge vans, and several utility bodies, including one designed for such far-off-the-road service that it carries its own winch to pull itself up a mountainside—loaded with TNT at that.

But the book is yours, so why wait? In addition to the examples on these pages you'll find many more if you will

TURN TO PAGE 62, PLEASE



The Heil Model 11 dump body holds 8 cu. yards. Front and rear are 6 in. higher than sides allowing for offset-type upper tailgate hinges. The single-cylinder hoist is Heil Model St 94-40

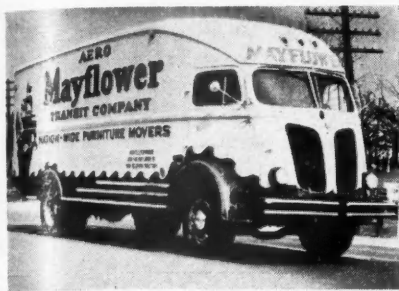


Orville Body. Co. built this special demonstration unit for the Arco Co. Sliding side doors roll into roof to display Arco color machine. Truck is finished in white, mulberry and green



Inside this 12-ft. Williamsen body is a traveling grocery store complete with easy-access step, 36-in. center isle and shelving on both sides. Streamlined paint job is all black and pure white





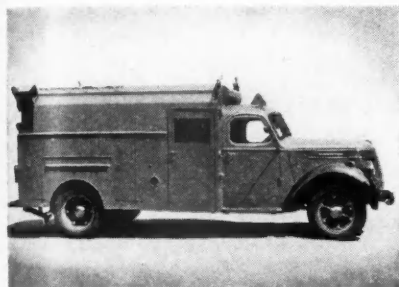
Aero Mayflower Transit Co. fashioned a fleet of these streamlined bodies using Met-L-Wood ribless design for all panelling. Although larger than previous models, bodies are lighter



Meyer Body Co. of Buffalo offers this standardized single-compartment ice cream body equipped with any of various refrigerating systems. This one has plug-in unit and hold-over plates



12 cu. yd. to the load, this Heil job makes real hauls for Builders' Sand & Gravel Corp. Swinging partitions divide body into 6 compartments. Straddle-mounted hoist Heil OT-73-80



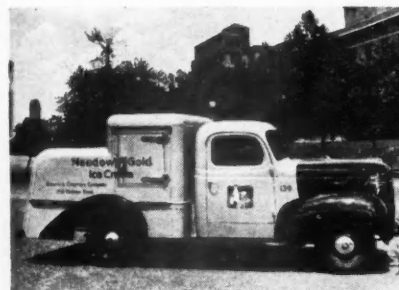
Truck Engineering Corp.'s new line construction body has a crew compartment behind standard cab but attached to cab through flexible connection. Winch is under crew section



The 16-foot Williamsen trailer body is insulated with Dry-Zero and refrigerated with gasoline-powered unit in screened front compartment. Lining is sealed to allow for steam cleaning



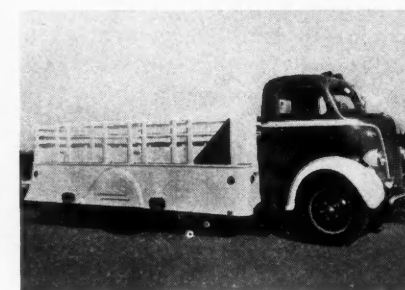
Proctor-Keefe Body Co. built plenty of sales appeal into this Altes job using hardwood frame work with steel panels and an oak stave cask. Predominant colors are Tivoli cream and green



To Herman Body Co. goes credit for a combination ice cream and express job. Refrigerated compartment has 6 in. of Cel-Cork and one Dole hold-over plate, charged from central plant



Herman also built this 7-ft. high van of all-welded Cor-Ten steel. Effective tan and cream color scheme minimizes unusual height; adds good eye appeal to what might be an awkward vehicle



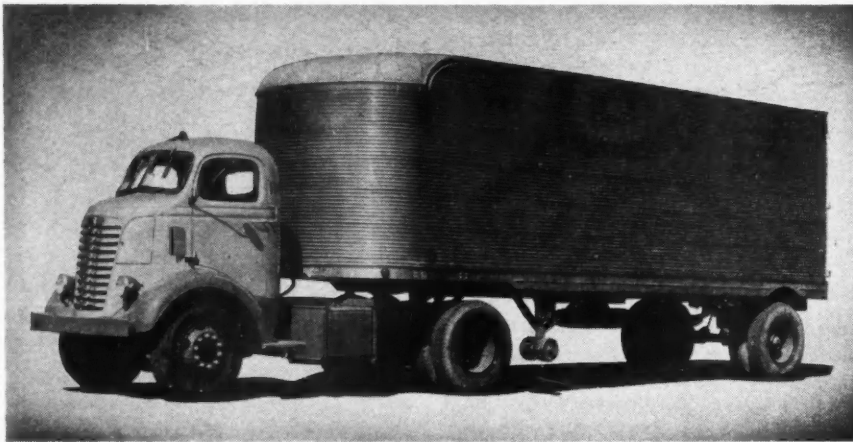
Canned syrup needs little protection but weighs plenty. Hence this streamlined cargo body by American Body & Equipment Co. Chassis and cab are black; body, fenders, trim, light cream

Far left: The 12-cu.-yard Gar Wood dump bodies (water-level capacity) can dump to either side, singly or together. Hoists are model SD88X

Left: Standard Drug Co.'s new 15-ft. body was made of 6-in. cove-type Lindsay Structure by Brunswick Body Works

Right: The Toronto (Canada) Star designed and built this body to its own (and our) liking. Outstanding feature is the special "rear porch" for "jumpers." Details are given on page 66





FRUEHAUF—1940

The Fruehauf semi-trailers (left and on opposite page) are both 24 ft. long and 8 ft. wide, but the inside body height of the 1940 stainless steel model is 7 ft., while height of the 1935 model is only 6 ft. 6 in. giving the newer model 96 cu. ft. more loading space. Both are designed for a 20,000 lb. payload and equipped with

SAVINGS IN WEIGHT

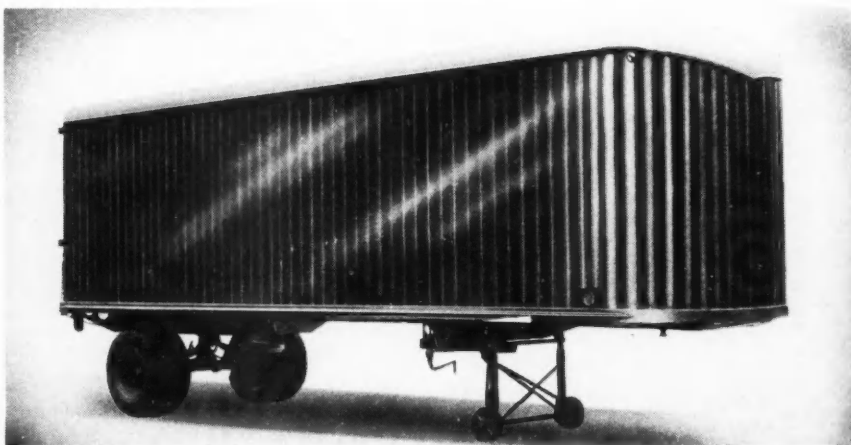


THE history of trailer design consists of countless chapters headed "weight reduction." It might seem that a thesis on "the weight that wasn't there" would be simple indeed. Actually, nothing could be further from the truth. If it were possible to simply omit some part of the trailer and thereby save the weight, all the designer would have to do would be to decide which part to omit. Unfortunately all of the parts of the trailer are needed except, in rare instances, the landing gear. There are some cases where weight has been omitted by leaving off the landing gear. All other weight reduction has been effected by substituting materials or changing the design of the trailer.

A great many technicians have contributed to this weight reduction. The materials which made the reduction possible were not just lying around. Many of them had to be developed for the express purpose of making transportation more efficient and more economical. Then, after the manufacturers of finished metals had finished their work it was necessary for the trailer designers to experiment and determine the operating characteristics of the raw material.

The combined efforts have produced a very happy result. A look at the detailed comparisons of the old with the new will prove that beyond all doubt. The weight reductions are

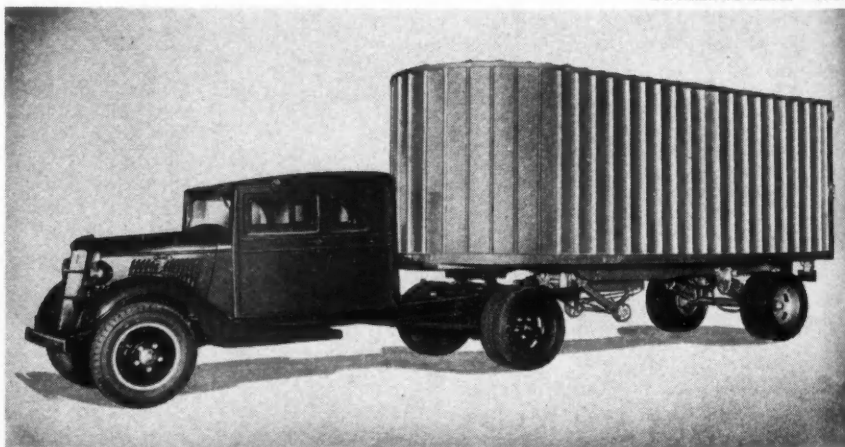
Comparison of '40 and '35 models shows modern



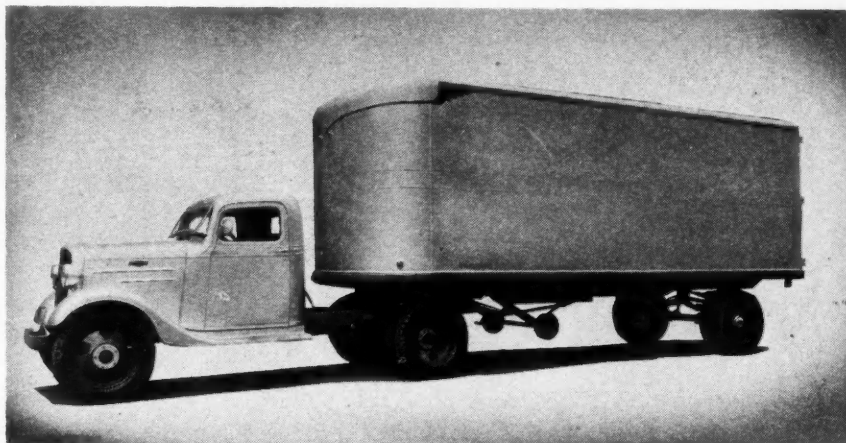
TRAILMOBILE—1940

The 1940 Trailmobile semi-trailer (above) is 26 ft. long while the 1935 model (below) is only 22 ft. long. Both have bodies 7 ft. high and 8 ft. wide; both are designed for a 25,000 lb. gross weight; both have 9.00/20 tires. In spite of 224 cu. ft. additional loading space, the new outside frame trailer weighs 5350 lb. while the 1935 veteran weighs 7880, representing a saving of 2530 lb.

TRAILMOBILE—1935



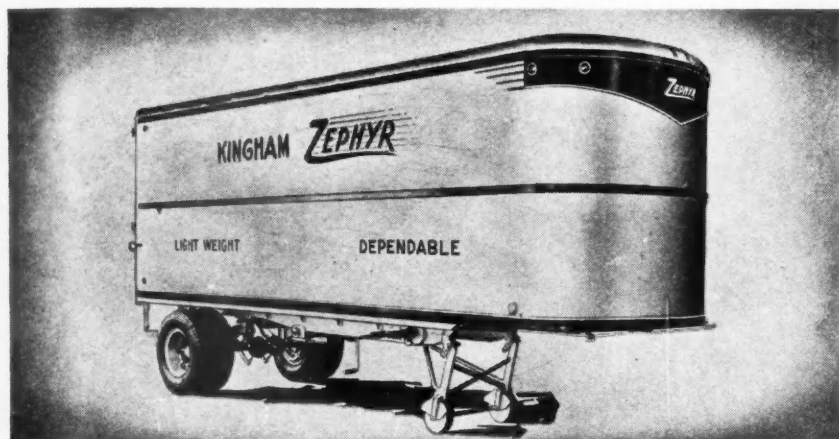
9.00/20 dual tires. The new model has an oak floor which wears better than the yellow pine floor of the 1935 job and weighs 61 lb. more. Even with 96 cu. ft. less loading space and an inferior floor the 1935 trailer weighs 7450 lb. The new stainless steel model with more load space weighs only 5525 lb. The saving obviously is 1925 lb.



FRUEHAUF—1935

MARK TRAILER PROGRESS

design reduces weight and provides more space



KINGHAM—1940

The 1940 Kingham Zephyr semi-trailer (above) is 22 ft. long, 8 ft. wide and is 7 ft. high inside. The older model (below) is 22 ft. long, 8 ft. wide and has a body height of 6 ft. 6 in. giving the newer model 88 cu. ft. more loading space. Both were built for 22,000 payload and carry 9.75/20 tires. The new one weighs 5850 lb., the old one 9600 lb. The resultant weight saving is 3750 lb.

KINGHAM—1935



so marked that they suggest a little thought on the operating problems involved, in order to point out just what the operator gains by the substantial weight reduction with which he has been presented.

If the operating advantages were listed one by one, they would look like this:

1. Using the same power, schedules can be shortened with the same pay load.
2. Using the same power, more payload can be moved on the same schedule.
3. Using less power the same schedule can be maintained with the same payload.

The conditions of operation and the application of available power units will probably dictate that some combination of these advances will be more desirable than using the weight reduction to gain any one of them exclusively.

The saving of time makes it possible to do more work with the vehicle in a day, or whatever unit may be the method of measurement. It also makes it possible to reduce the ratio of driver cost to vehicle earnings. Thus the earning power has increased and the operating cost decreased.

Much the same can be said of increased payload. A driver working a schedule with more payload and arriving at the same time has not

(TURN TO PAGE 132, PLEASE)

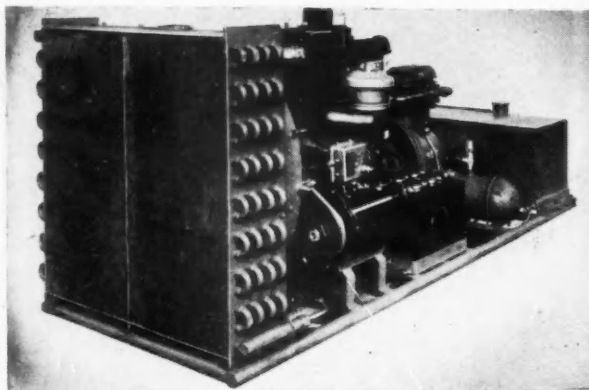


Fig. 1. Self-contained Baker power unit has 4-cyl. air-cooled engine and its own electrical system

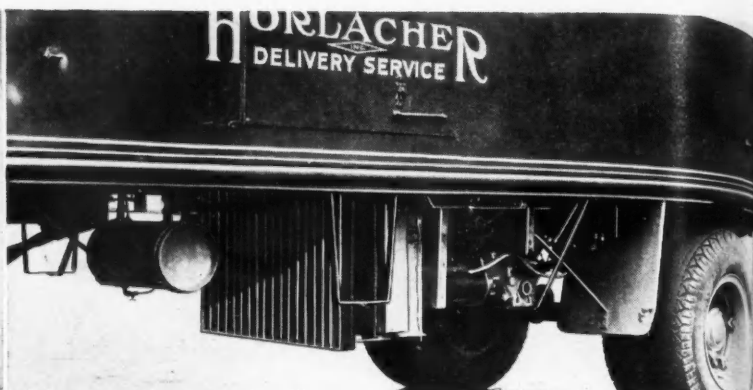


Fig. 2. A modern Carrier power unit shown installed underneath trailer body; small 4-cyl. water-cooled Waukesha engine is used

COLD COMFORT FOR

The Story of Truck Refrigeration as

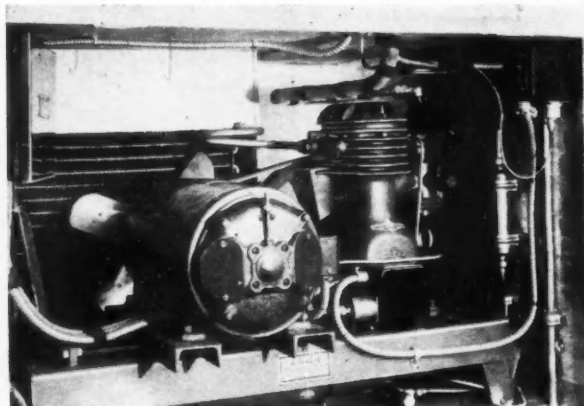


Fig. 4. A Century dual-wound motor powers this Baker unit from either AC or DC current

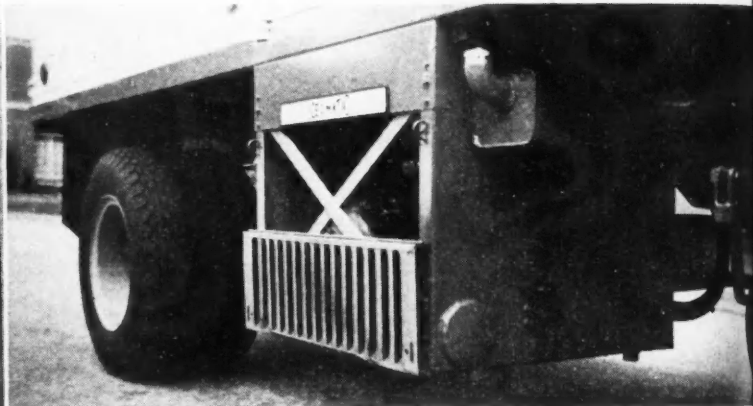


Fig. 5. Williams Ice-O-Matic power unit is completely enclosed in special compartment. Uses one-cylinder air-cooled gasoline engine

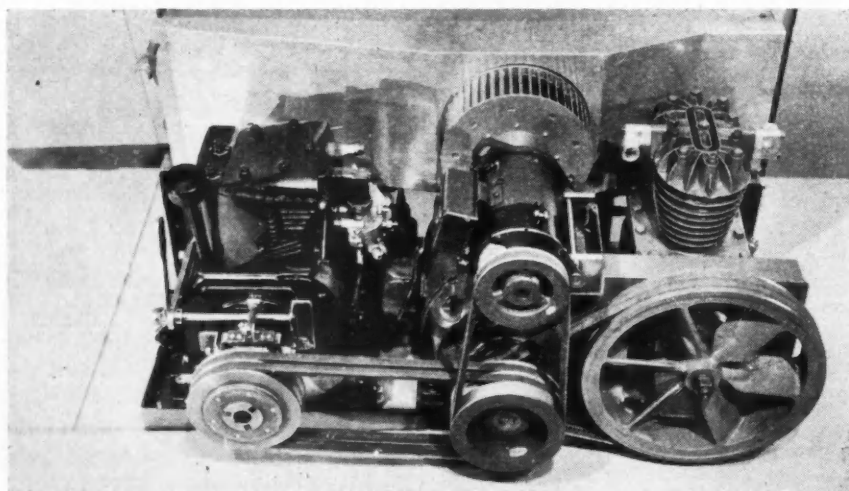


Fig. 7. Mobile power unit uses propane for both its refrigerant and engine fuel. The 110 or 220 volt motor is furnished for plug-in service

LEADING MANUFACTURERS OF TRUCK REFRIGERATING UNITS

(Products are described in this article)

- (I) Air Induction Ice Bunker Corp., Hoboken, N. J.
- (M) Baker Ice Machine Co., Omaha, Neb.
- (C) Broquinda, Inc., St. Petersburg, Fla.
- (I) Chill Cold Mfg. Company, Chicago, Ill.
- (E) Century Electric Co., St. Louis, Mo.
- (M) Carrier Engineering Co., Syracuse, N. Y.
- (M) Curtis Pneumatic Machinery Co., St. Louis, Mo.
- (P) Dole Refrigerating Co., Chicago, Ill.
- (B) Dromgold & Glenn, Chicago, Ill.
- (M) The Frigidaire Division, General Motors Corp., Dayton, Ohio.
- (M) General Electric Co., Schenectady, N. Y.
- (B) Industrial Mfg. & Engineering Co., Chicago, Ill.
- (P) Kold Hold Co., Lansing, Mich.
- (M) Mobile Refrigeration, Inc., New York, N. Y.
- (M) Nash-Kelvinator Corp., Detroit, Mich.

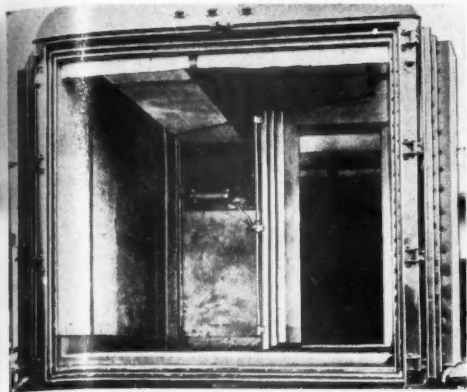


Fig. 3. Two-compartment interior of truck in Fig. 2. Note Kold-Hold plates



PERISHABLE CARGOES

it Has Developed to the Present Day

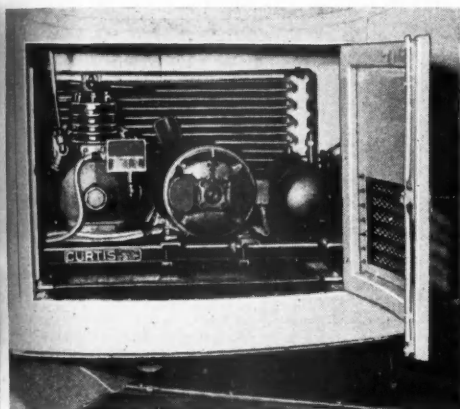


Fig. 6. Typical Curtis condensing unit. This one has dual-wound motor

(C) Toone-McCoy Company, Portland, Ore.
(M) Williams Oil-O-Matic Heating Corp.,
Ice-O-Matic Div., Bloomington, Ill.

KEY TO ABBREVIATIONS

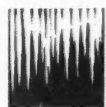
(B) Brine (I) Ice
(C) Solid Carbon Dioxide (M) Mechanical
(E) Electrical power take-off (P) Hold-over plates

LEADING MANUFACTURERS OF BODY INSULATING MATERIALS

Alfol Insulation Co., New York, N. Y.
Armstrong Cork Co., Lancaster, Pa.
Balsa Wood Co., Inc., New York, N. Y.
Dry Zero Corp., Chicago, Ill.
Eagle Pitcher Lead Co., Cincinnati, Ohio
Mitchell & Smith, Inc., Detroit, Mich.
Wilson & Co., Chicago, Ill.
Wood Conversion Co., St. Paul, Minn.

COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

Demand for colder temperatures over longer routes has led truck refrigeration out of the experimental stage. Herewith the highlights of 17 present-day systems



AS short a time ago as 1929, a scheduled truck operation that carried 10,000 lb. of perishable products 300 miles across the Mojave Desert from Los Angeles to Las Vegas, Nev., at a temperature not exceeding 50 deg. made material for a feature story in COMMERCIAL CAR JOURNAL because it was so unusual. "Only one stop for re-icing" was one of the operator's most triumphal boasts, but he made no comment about the difficulty he had had in obtaining the necessary equipment—a process that probably involved considerable experimentation and assembling of purchases from a score of suppliers.

Today operations that double the length of that run, carrying 30,000

lb. of frozen foods over the same territory at a controlled temperature of "zero," are accepted as a matter of course. The refrigeration systems that make these runs possible are commercially available to any one who wants them and are supplied completely engineered to do the specific job for which they are designed.

The incident proves more graphically than 10,000 words could do the transition that has taken place in truck refrigeration during the past decade. It points, too, with startling sharpness at the timeliness of a round-up of "what's what" in truck refrigeration today. What started truck refrigeration anyway and where does it go from here? What

(TURN TO NEXT PAGE, PLEASE)

COLD COMFORT FOR PERISHABLE

The Story of Truck Refrigeration as it Has Developed to

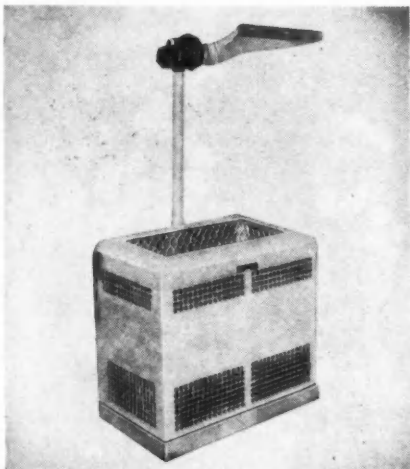


Fig. 8. (top) Air Induction Ice Bunker with blower for forced circulation.

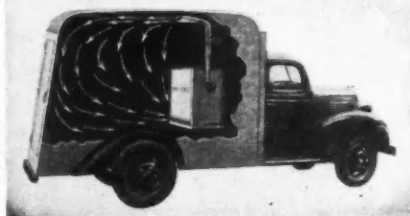
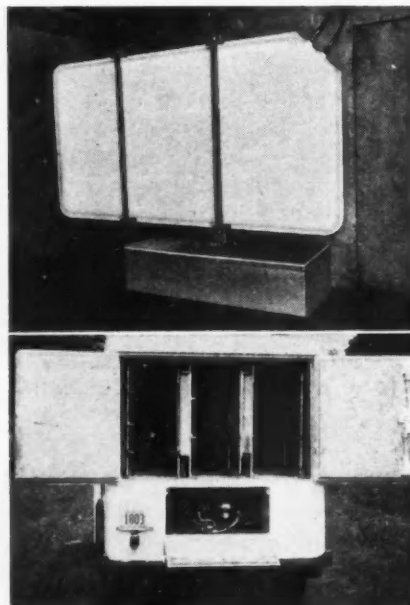


Fig. 9. (above) Chill-Cold unit using water ice and forced air circulation.

Fig. 10. (below) Kold-Hold hold-over plates for use with standard condenser.

Fig. 11. (bottom) Dole cold plates in vertical mounting between milk racks.



(CONTINUED FROM PRECEDING PAGE)
are the various types of refrigeration currently available and what are the relative merits of each? Who makes and sells the equipment needed? These are some of the questions **COMMERCIAL CAR JOURNAL** attempts to answer here.

Even before World War I ice cream was a popular dish, but to get it you either made it or trotted down to the corner ice cream parlor provided you got past the neighboring swinging doors. There you bought the proprietor's own idea of what ice cream should be and usually paid a fancy price. Then somebody got the idea that ice cream could be made better and more economically at a central plant and distributed by means of the motor truck to the local parlors. Thus about 1916 the first "refrigerated" truck made its appearance. Its body was a square box-like structure with no top; ice cream was stored in cans near the middle and buried in a huge pile of dripping ice and salt. The cost was high; the weight was high (a gross of about 43 lb. per gal. of ice cream as compared with about 16 lb. today), and the spoilage was high. But the idea clicked. Trucks were in the business of transporting frozen goods and they were in the business to stay.

By the early 20's operators had begun to realize that the effect of direct sunlight could be minimized by the use of an insulated roof and soon followed through with insulated floors and walls to keep heat out and cold in. An ice and salt brine tank mounted in the roof now kept temperatures below the freezing point and the necessity for individual packs was eliminated. Solid carbon dioxide (marketed and popularized under such trade names as Dry Ice and Carbonice) was made available commercially in 1923 and soon found its way into use as a truck refrigerant, mounted in a relatively small bunker near the roof. It was much lighter and cleaner than water and ice, could maintain much lower temperatures,

but used inefficiently, was much more expensive.

Almost at the same time came the development of various types of portable mechanical systems. Early installations were adaptations of commercial or household plants unsuited to the rigors of the truck installation. A much later variation of the mechanical system was one which opened the hitherto closed refrigerant circuit and used a hydro-carbon refrigerant which also served as fuel for the auxiliary engine.

In the meantime came the invention of the hold-over plate which permitted the freezing or "charging" of an "eutectic" solution at near zero temperatures capable of absorbing heat from the truck body for long periods on the road.

Today's truck refrigeration methods still depend upon the use of water ice, solid carbon dioxide the hold-over plate or some form of mechanical system. But simplification, refinement and the development of new techniques that promote much greater efficiency have transformed the earlier experiments into tools of industry.

Let's have a layman's look at the way these modern systems work, together with a few of the advantages claimed by their various proponents. They are outlined here in bare essentials but described in considerable detail below under the manufacturer's name. All are predicated on the use of a well-built, properly-insulated body.

1. Water Ice Only. Usually consists of a suitably-mounted ice bunker together with a fan to increase air flow directly over the ice. Can maintain temperatures as low as 40 deg. in small trucks. Principal advantages: low initial cost, good humidification.

2. Water Ice and Salt. Usually consists of brine tank, brine pump and fan with cooling coils added in some cases. Power is usually from single-cylinder gasoline engine. Can

(TURN TO PAGE 140, PLEASE)

CARGOES (CONTINUED)

the Present Day

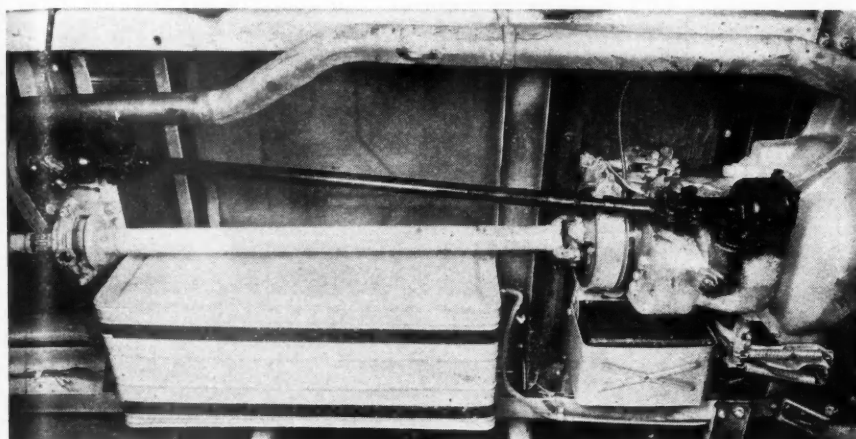


Fig. 12. The General Electric power take-off, featuring specially designed magnetic clutch (at left), is controlled by inside temperatures or truck movement.

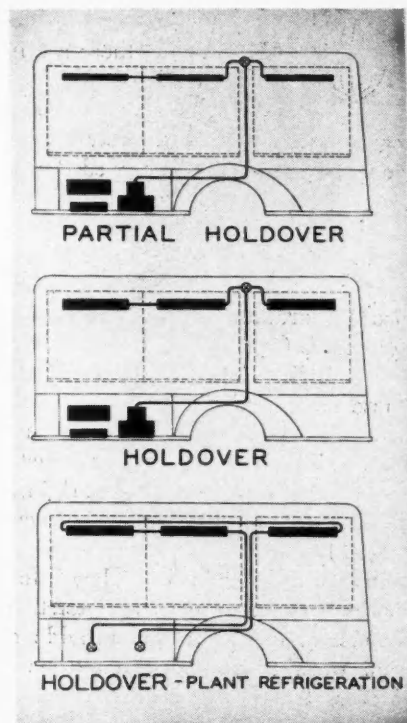


Fig. 13. Various options for G. E. refrigerated body. See text for details.

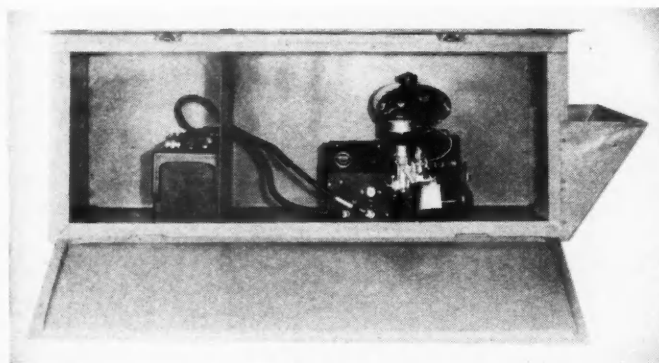


Fig. 14. Power unit for BloKold system (see also Fig. 15). Contains battery, 300-watt generator and automatic control.

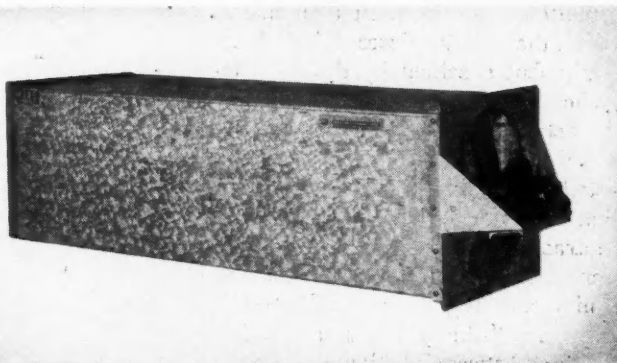


Fig. 15. Solid-carbon-dioxide bunker of BloKold system. The 12-volt fan is powered by generator shown at left.

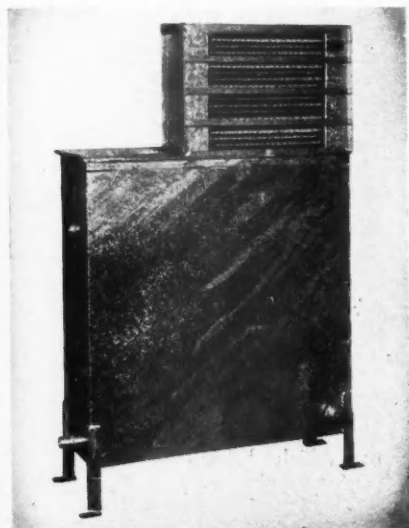


Fig. 16. Coldjet brine tank showing its integrally mounted cooling coils.

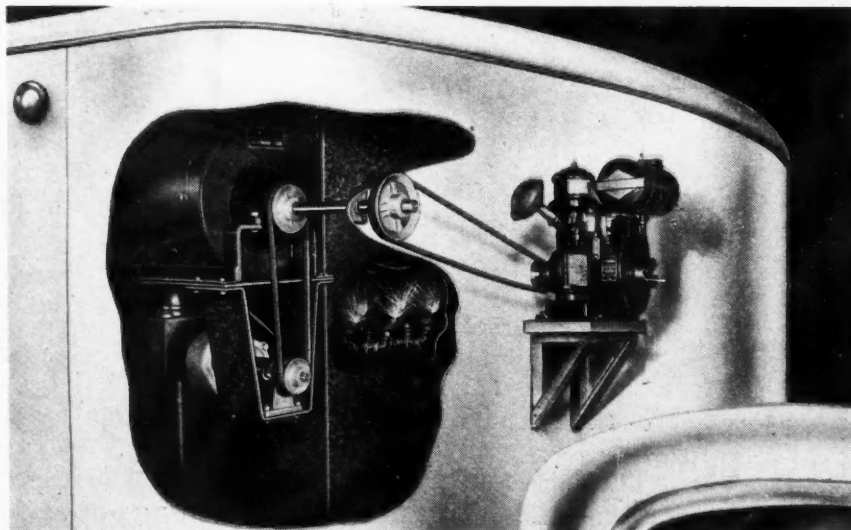


Fig. 17. Dromgold & Glenn brine system uses no coils but blows air through special brine jets. Externally-mounted engine powers the blower and pump.



ALTHOUGH there are in this country 49 different sets of State rules and regulations prescribing safety equipment that the well-equipped truck should wear, there is one additional set, more inclusive than any of the others. That is Part 3 of the "Motor Carrier Safety Regulations (Revised)" ordered by the Interstate Commerce Commission for all trucks engaged in interstate commerce. These new regulations became effective for common and contract carriers on Jan. 1, 1940, and for private carriers on Oct. 15, 1940 (original date before two postponements was Aug. 1).

In addition to being "law" for nearly a million trucks in interstate commerce, the rules also provide a good working yardstick for owners of other trucks who seek to further their operating safety records by equipping their trucks with proper equipment.

Accordingly, COMMERCIAL CAR JOURNAL lists below, in alphabetical order, the various pieces of individual equipment specified by the ICC, together with comments briefed from the actual text.

Before examining the equipment in detail, two important exemptions should be noted. The first applies to contract, common and private carriers alike and exempts from the equipment regulations all trucks operating "wholly within a municipality or between contiguous municipalities or within a zone adjacent to and commercially a part of any municipality or municipalities." The ICC has fixed the limits of these

"adjacent zones" for a few of the nation's largest cities. In other cases the zones have been or will be determined by local ICC offices. In all cases it is understood that adjacent cities are included within the exemption even when they lie in different states.

The second exemption applies to common and contract carriers only when engaged in "the casual, occasional or reciprocal transportation of passengers or property in interstate or foreign commerce for compensation by any person not engaged in transportation by motor vehicle as a regular occupation or business." All other petitions for exemptions to Part 3 of the regulations have been denied.

For a full text of the regulations, which includes mounting details, readers should contact local ICC offices or send 20 cents to the Superintendent of Documents, Washington, D. C., asking for "Motor Carrier Safety Regulations, Revised." In the brief below the terms "all vehicles" or "all trucks, etc.," apply, of course, only to those which come within the jurisdiction of the ICC. When the term "new vehicle" is referred to it means any vehicle acquired by common and contract carriers after Jan. 1, 1940, and any vehicle acquired by private carriers after Oct. 15, 1940. Here are the rules:

Brakes

Every vehicle must be equipped with two separate braking systems, at least one of which shall be a mechanical hand parking brake equipped with ratchet and pawl or other suitable locking device. Combinations of vehicles must be equipped with

On rear: 1 tail light (red); 1 stop light (red or amber); 2 clearance lights (red); 2 reflectors (red)

Side clearance light (red) May also serve for rear requirement



Side reflector (red)

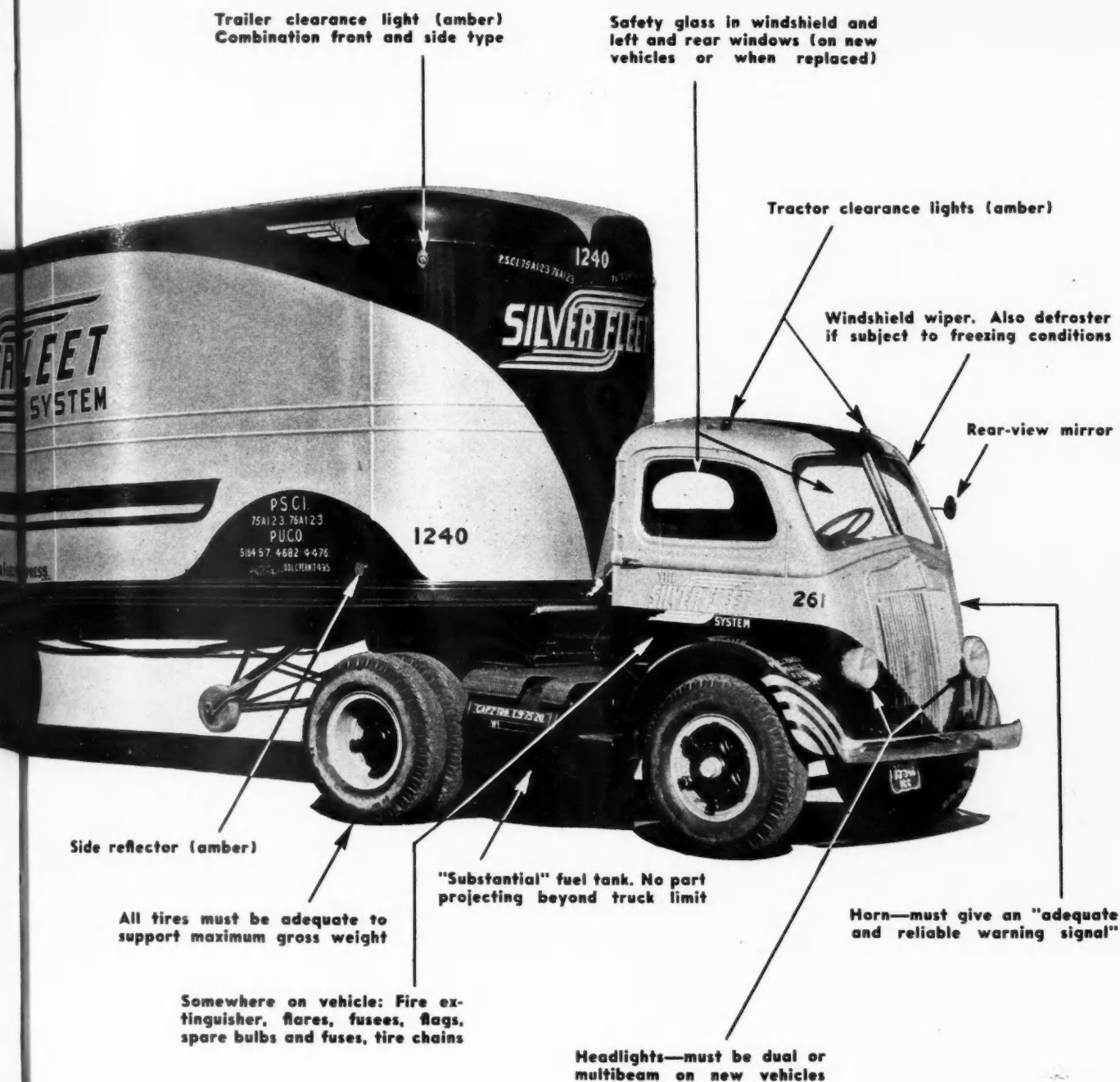
All brakes must be operative at all times. Rearmost brakes should be applied at fastest rate or ahead of other brakes

SAFETY EQUIPMENT

Part 3 of the Motor Carrier Safety Regulations provides basis for what the well-dressed truck should wear

brakes adequate to stop and hold such combination. (See additional regulations for new vehicles below.)

Stopping requirements specified for dry normal road surface are as follows: Vehicles having brakes on all wheels, 30 ft. from 20 m.p.h.; vehicles not having brakes on all wheels, 45 ft. from 20 m.p.h.



SPECIFIED BY THE ICC

In any combination of motor vehicles, means shall be provided for applying the rearmost trailer brakes, of any trailer equipped with brakes, in approximate synchronism with the brakes on the towing vehicle and developing the required braking effort on the rearmost wheels at the fastest rate; or means shall be provided for

applying braking effort first on the rearmost trailer equipped with brakes; or both of the above means capable of being used alternatively or conjunctively may be employed.

Brake tubing and hose whether for air, vacuum or hydraulic systems must be adequate.

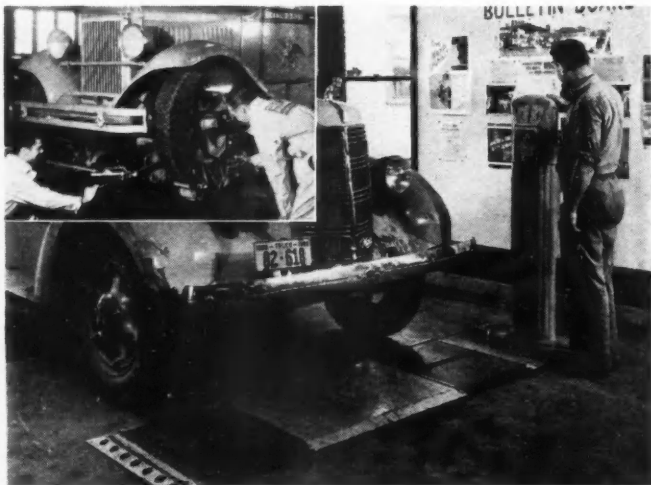
All brakes must be operative at all times.

Means may be used for reducing the braking effort on the front wheels of any bus, truck, or tractor, provided that no such means shall be capable of making the front wheel brakes entirely inoperative.

Every new motor vehicle shall be equipped.
(TURN TO PAGE 120, PLEASE)

SHOP EQUIPMENT IS A FLEET MUST

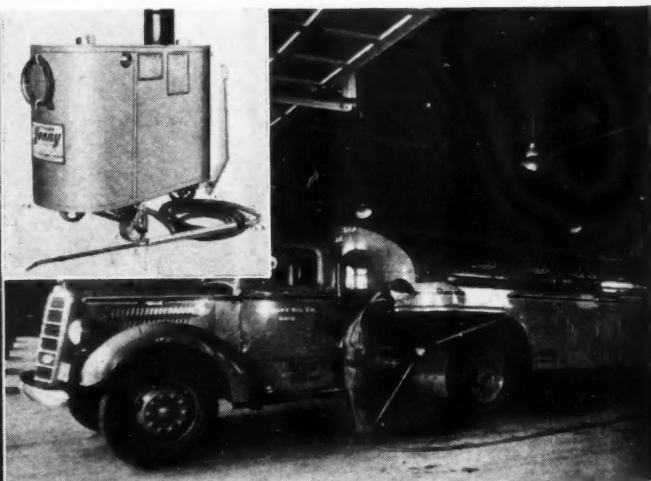
If trucks are to be inspected speedily and thoroughly and kept at the peak of operating efficiency



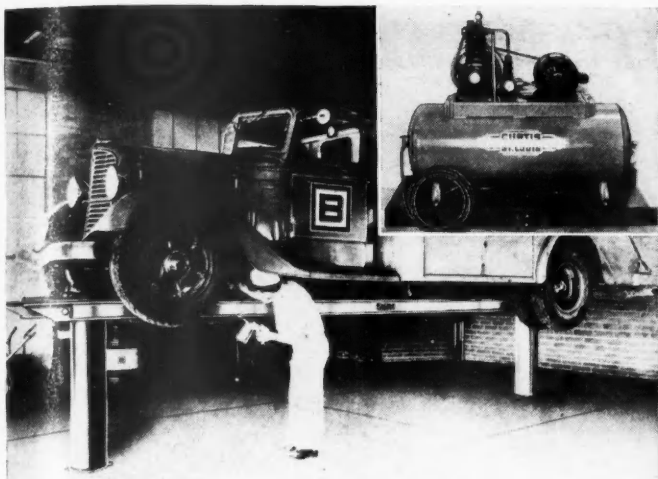
1. The time or mileage arrives which indicates that the truck is due in the shop for periodic inspection. Just inside the door the truck runs over track-type equipment which registers wheel alignment. Its message shows that a more detailed check is desirable



2. Brake equalization is also checked on track-type equipment and when it does not show up well a detailed check of brake condition must be made. A pyrometer is applied to each brake drum in this particular case



3. In preparation for the heavy work to follow the truck is washed. A power washer does much of the work but must be supplemented with a steam or chemical cleaner to get the chassis and disassembled parts clean



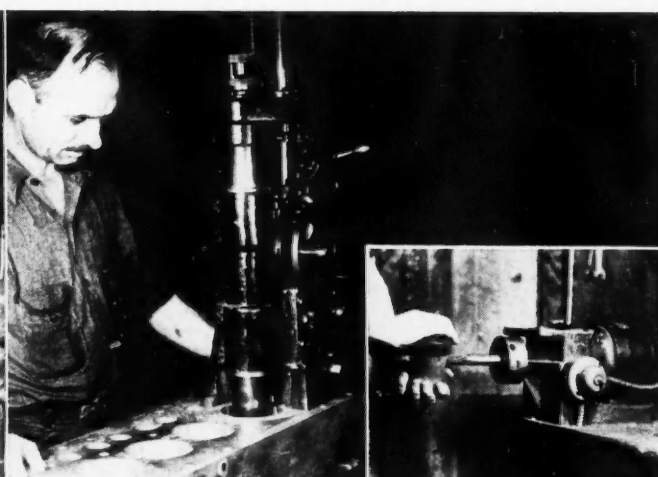
4. The truck goes on the hoist for lubrication and underside inspection. This visual inspection is as necessary as instrumentation in determining repairs. A compressor operates the hoist and other equipment



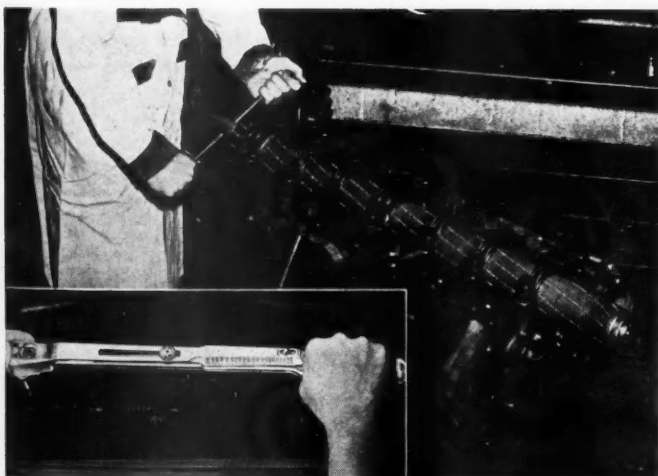
5. We are still looking for trouble. Here we have an exhaust gas analyzer and a motor analyzer ferreting out the facts. Should the engine be torn down or will just a tune-up do? The instruments will decide



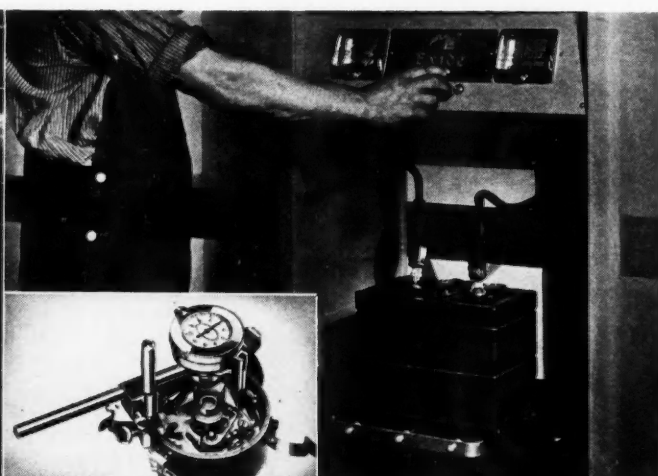
6. The answer was "come down" and we start by giving the valves a going over. A valve refacer renews the valves and a high-speed grinder reconditions the valve seats. Precision here as well as elsewhere is vitally necessary



7. It appears that a pretty complete engine job was called for. At this stage the cylinders are reconditioned while new pins are being fitted to new pistons. When finished this engine should act like a new one

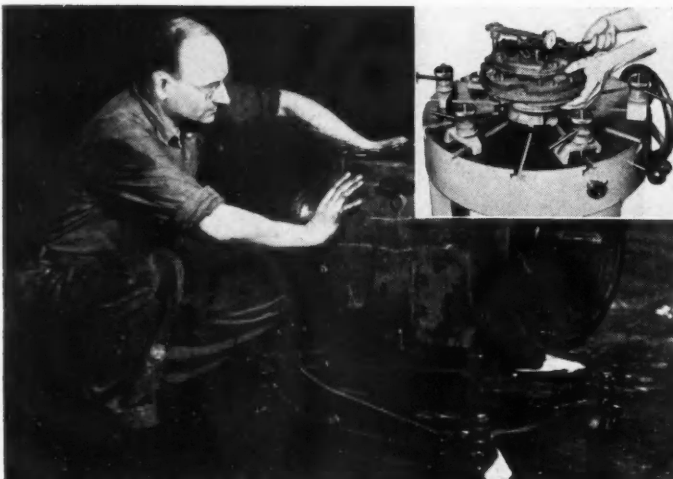


8. In the meantime the engine bearings are not being neglected. Here we see the main bearings being line reamed. When re-assembled, all parts will be adjusted with a modern torque wrench assuring uniform tightness

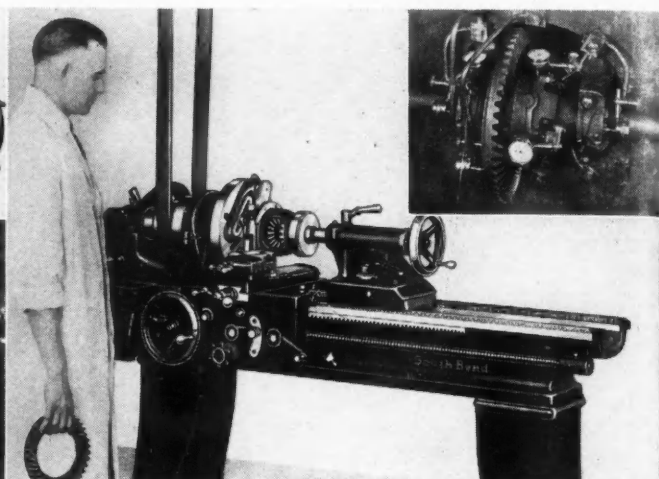


9. The electrical system needs overhauling like the mechanical parts. A thorough check begins with the battery and goes through the low tension system and the high tension system from battery to breaker points
(CONTINUED ON SUCCEEDING PAGES)

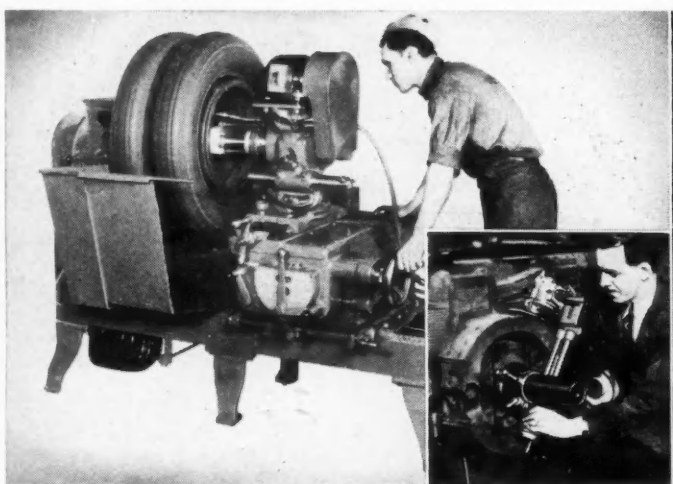
SHOP EQUIPMENT



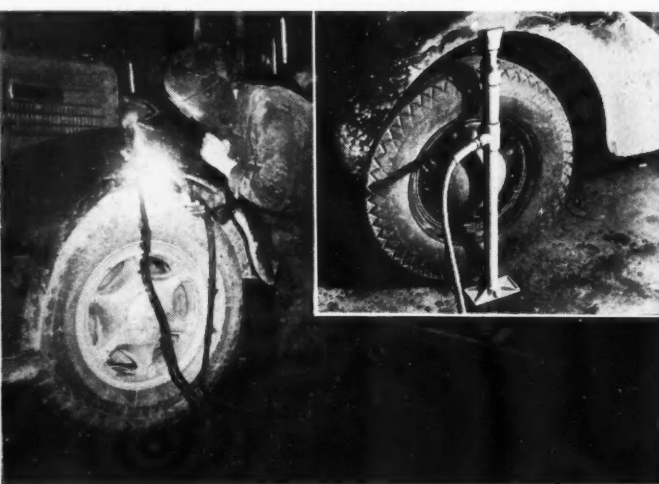
10. While we are at it we take the transmission down for internal inspection and possible replacement of parts. While the transmission is down the clutch is rebuilt with new parts and adjusted to specifications



11. Next the differential is removed for inspection and always with new gears and sometimes even when using the old ones the case must be trued up. Run out may be detected without dis-assembly by mounting dial gages



12. We cannot neglect the brakes so we turn the drums and reline the shoes. Then we make sure the assembled shoes fit the drum by grinding the lining if necessary. When finished we again call upon our test equipment

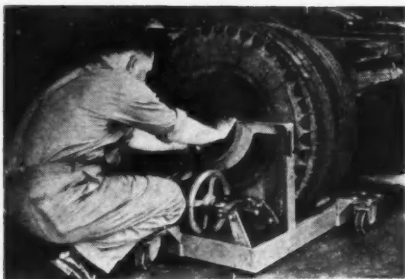


13. Among their many other uses we find that the arc welder and the hydraulic ram make it possible to repair external damage to bodies and fender and since appearance is important these days we call them into service

NEW ITEMS OF SHOP EQUIPMENT

New Wheel Dolly by Globe

A newly patented wheel dolly, designed to handle all sizes of single or dual wheels, has been placed on the market by the



Globe Hoist Co., Des Moines, Iowa, and Philadelphia, Pa. Movable rollers engage the tires when the dolly is moved into operating position. In the case of duals, the rollers automatically adjust themselves to compensate for any variation in tire diameter. By means of a hand wheel, the operator can adjust the rollers to insure the wheels of "riding" properly on the dolly. The unit is mounted on ball-bearing, swivel casters and is equipped with a stanchion for moving.

King Fast Charger

Featuring a time switch and forced draft ventilation, a new King Fast Battery

Charger has been announced by the Electric Heat Control Co., 9127 Inman Ave., Cleveland, Ohio. The unit will charge a single battery at 80 amperes, tapering off, and also may be used to charge batteries in parallel. An ammeter, a voltmeter and the time switch are mounted on an inclined panel forming the top of the charger. The switch has a time limit of one hour. The unit is available for 110 or 220 volts, 60-cycle operation.



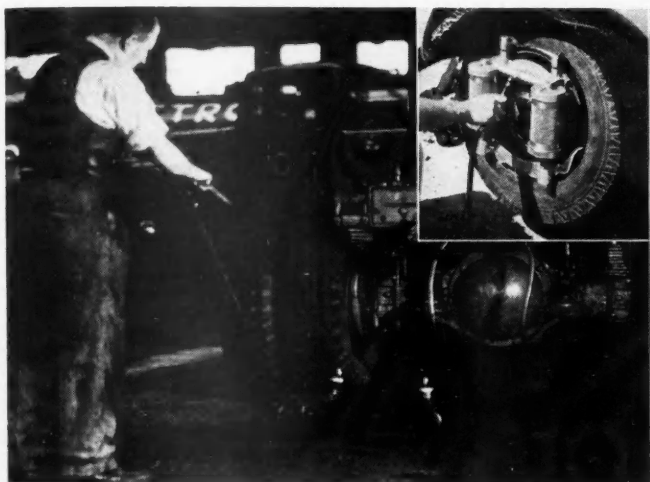
IS A FLEET MUST (CONTINUED)



14. To preserve the vehicle as well as to make it a credit to the company we refinish the surface. Power sanding and spray painting enable us to do it at a reasonable cost and without too much lost truck time



15. Safety has become important in any fleet so we do not neglect to aim headlamps to provide the most light with the least glare and also to service the skid chains in case the driver needs them in an emergency



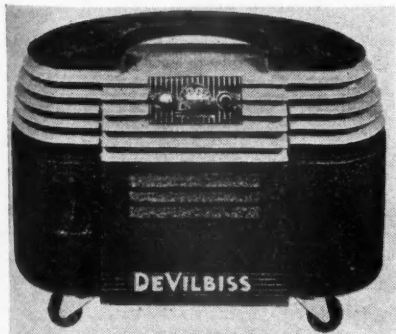
16. A rebuilt truck cannot go out on poor tires so let's jack it up while the tire man has a look. A tire mounter reduces the amount of work and prevents delays which can so easily add up in the tire department



17. For a final check the truck goes onto the dynamometer. Here all units can be checked and adjustments made. It is the last step in the process of rebuilding and it takes most of the guess work out of shop work

Small Compressor Unit

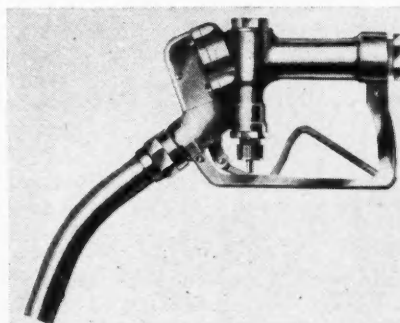
A streamlined, compact, portable air compressor unit for operating small paint spray equipment has been developed by the De-



Vilbiss Co., 300 Phillips Ave., Toledo, Ohio. Known as Type NKB, the unit is rated at $\frac{1}{2}$ hp. and delivers 4.55 c.f.m. at 45-lb. pressure. With a maximum pressure of 50 lb., it will hold a medium spray gun at 32 to 40 lb. The compressor weighs 72 lb. and is equipped with four rubber-tired swivel casters.

Non-Overflow Gas Nozzle

Claimed to prevent spilling and wasting of gasoline, a new "Safety-Fill" gasoline pump nozzle has been made available by the Opaco Div. of American Machine & Metals, Inc., East Moline, Ill. The new nozzle is equipped with an automatic shut-off valve, actuated through a by-pass in the end of the nozzle. When the gasoline in



the tank being filled reaches the by-pass opening, pressure is transmitted to the valve which automatically cuts off the flow of gasoline.

(TURN TO NEXT PAGE, PLEASE)

NEW ITEMS OF SHOP EQUIPMENT

(CONTINUED FROM PAGE 59)

Lee Valve Refacer

A new-model valve refacer, streamlined in design, is the most recent development of the K. O. Lee Co., Aberdeen, S. D. The head stock is built as a single unit, with adjustable anti-friction bearing that is said to last the life of the machine. The belt is automatically adjusted by the motor to



a tension suitable for operating. All movable parts, including the belt and motor enclosed in the base, are protected from grit and dirt. A water tank of large capacity is fitted with a filter to further improve the operating cleanliness of the machine.

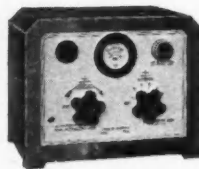
Allen Motor Analyzer

Especially designed for distributor and motor analysis, Model Y-82 Syncrograph engine analyzer is now available from the Allen Electric & Equipment Co., Kalamazoo, Mich. The unit, consisting of syncrograph, compression tester, volt-ampere tester and vacuum and high-tension tester, has all gages and dials grouped on a panel control board, illuminated by a special lighting fixture. The driving motor is of the A.C. 110-volt variable speed and reversible type. Test data may be recorded on specification cards mounted on the back panel of the unit.



Heavy Duty Battery Charger

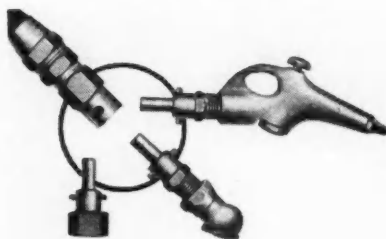
Providing gradual charging steps by means of two rheostats, Model SG-15 heavy-duty battery charger is available from the Valley Electric Corp., 4221-27 Forest Park Blvd., St. Louis, Mo. Fully enclosed in a metal case and equipped with an oversize transformer, the charger has an automatic bulb current regulator, which is said to insure long bulb life. Model SG-15 will



charge one to 15 six-volt batteries. Built to similar specifications and available at lower prices, Models SG-12 and SG-6 will charge one to 12 and one to six batteries respectively.

DeVilbiss Air Tools

A group of air operated devices equipped with detachable connections has been made available by the DeVilbiss Co., Toledo, Ohio. By means of this combination the operator can use duster, tire chuck, spray gun and other pneumatic tools on the same hose line with a



minimum loss of time. The specially designed duster is for use in hard-to-reach places. It has a capacity of 13 c.f.m. at 80 lb. pressure.

Improved Power Pak

Providing 10 tons of hydraulic pressure from a compact, self-contained power unit and featuring "finger-tip" control, a new and improved Power Pak is being offered by the Snap-On Tools Corp., Kenosha, Wis. Designed primarily for body rebuilding work and requiring the attention of only one operator, the device is composed of a "Hydra-Ram" power unit and a large num-

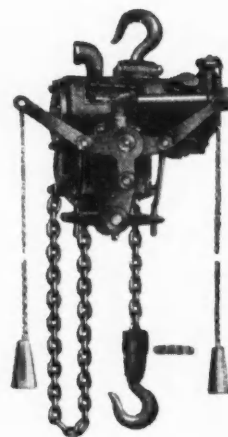


ber of attachments necessary in bending, pulling and straightening operations. All attachments and pads are of malleable and

alloy steel and free-turning threads on all extension tubes insure firm setting. A handy portable container is provided as well as a 44-page unusually complete instruction manual.

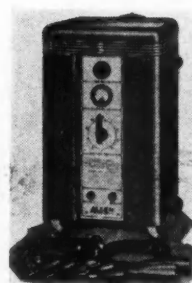
Air-Bloc Hoist

A flexible, link-chain air hoist for lifting loads up to 700 lb. recently has been introduced by the Ingersoll-Rand Co., Phillipsburg, N. J. Known as the Air-Bloc, the unit is equipped with an automatic up-and-stop control to prevent over-run of the chain in either direction. A safety feature prevents the load from falling if the air supply should fail. The unit is powered with a four cylinder, radial-type motor which is said not to be injured by overloading. It is available in three sizes; namely, LC-3, LC-5, and LC-7, which are designed to handle loads of 300, 500 and 700 lb. respectively.



Fast and Slow Charger

An all-purpose battery charger, known as Model F-160 Half-Hour Unitron, has been announced by the Allen Electric & Equipment Co., Kalamazoo, Mich. The new rectifier, finished in red and cream baked enamel, has a maximum charging rate of 80 amperes and can handle as many as 32 batteries in parallel at 2½ amperes each. A graduated control dial is provided. A time clock graduated in one-minute steps limits charge to 30 minutes without resetting; however, it is in the circuit only when charging at fast rate. Two wiring harnesses are supplied, one for fast and one for slow charging.



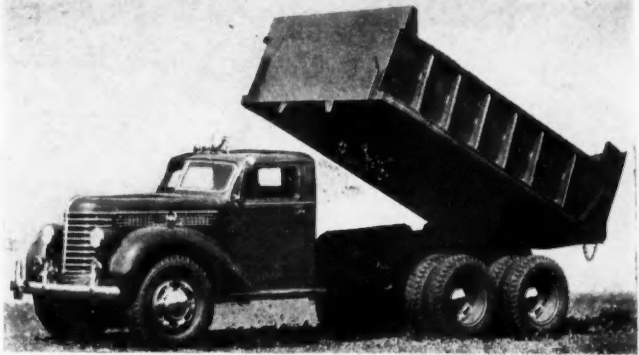
Low Cost Bear Aligner

A new, low-cost passenger car wheel alignment unit known as the 195-82 is now available from the Bear Mfg. Co., Rock Island, Ill. The outfit includes a Bear Convertible Rack, front end alignment units, Toe In, Tracking and Alignment Gages, Tire Scriber and the necessary tools and parts to service all passenger car axles, including both conventional and knee action types. The outfit is built on an add-a-unit design which permits the addition of tools for the handling of complete frame straightening operations.

(TURN TO PAGE 128, PLEASE)



This unit is a Ford COE 1 1/2-ton truck equipped with a model BF 27 F.O. Thornton Tandem Co. unit for four-wheel drive. G.V.W. is 27,000 lb. on quarry tread 10.50-16



The licensed G.V.W. of this Diamond-T 614 goes up to 36,000 lb. when equipped with a Truxmore third axle. Chassis, body & hoist, 15,000, leaving 21,000 lb. payload



This combination of UT Autocar and HLR Tractor unit is permitted to carry 36,000 lb. in Pennsylvania. It has 109 in. wheelbase and is equipped with 9.75-24 heavy duty tires



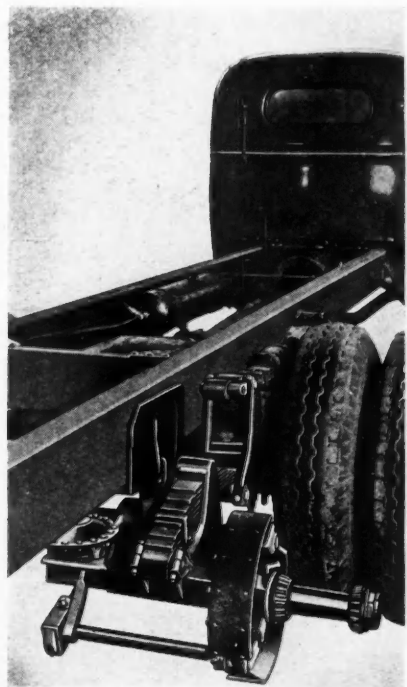
This Ford 95 hp. truck is equipped with a Fabco dual drive on 34 x 7 tires. The body is a four-yard mixer. The unit operates in California where it is rated at 26,000 lb.

THIRD AXLES FOR '41

Six-wheelers continue to pay their way by increasing pay load capacity

INCREASING payload without proportionately increasing vehicle weight has long been one of the points upon which the third axle manufacturers have claimed their share of business. They add to this better weight

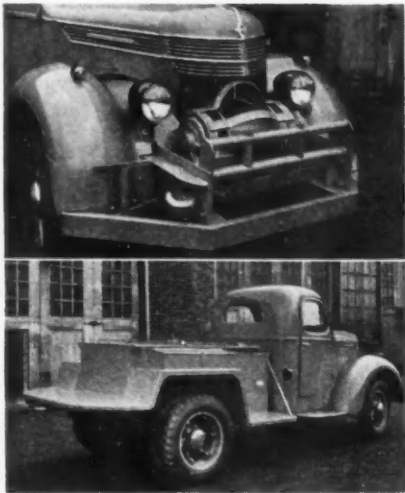
distribution and lower first cost, as well as lower fuel and tire costs for increased capacity and lower insurance costs. They have added no new mechanical principles but rather they have refined and modernized their product.



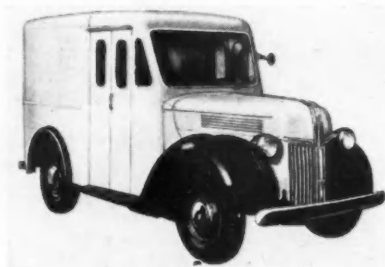
Mounted on a GMC 6-cylinder diesel truck with 20-ft. frame, body, and 9.75-22 tires the Utility third axle makes a unit which weighs 17,700 lb., rated for an 8-ton payload capacity.

BODIES—BODY MATERIALS—BODY EQUIPMENT

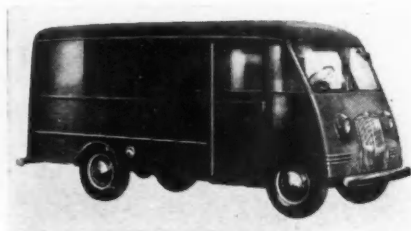
(Continued from Page 47)



This Truxmore body is made for oil-field work. On front is a winch for getting the truck in places where traction will not take it and the rear platform is for a shooting reel



Four-cylinder economy is now available in this all steel Brooks E-Z house to house delivery unit by Transportation Engineers, Inc., on Ford chassis



The Brooks VanEtte senior delivery unit, better built and smarter styled are manufactured exclusively on Ford chassis. Choice of V8 or 4 cylinder



American Body and Equipment Co. built this body on a 158 in. wheelbase Chevrolet to Hormel specifications



Truck and trailer bodies have 3 in. of insulation in the sides and 4 in. in the ceiling and 5 in. in the floor, all Dry-Zero. The bodies are built by the Williamsen Body Co., Ogden, Utah



Grain Belt Beer travels in style in this body 12 ft. 10 in. long, 78 in. wide and 64 in. high. Four inches of Dry-Zero keep the beer cool. Williamsen used steel and chrome moldings



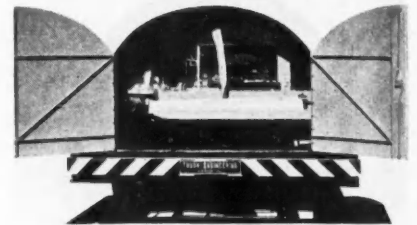
A Gar Wood power winch, two-section hydraulic repair tower and a special steel wrecker derrick are all equipment on this Baltimore Transit truck



Quaker City Iron Works made this tank trailer to carry 6000 gal. It is made of Hi-Tensile steel and weighs 12,500 lb. with meter equipment. The over all length is 320 in., width 95½ in.



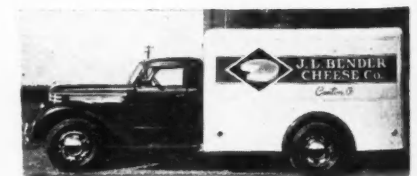
This Gar Wood tank gets 1000 gal. in a single compartment. It is the model 2222 noted for streamline appearance



A push-button control on a panel in the cab operates this flusher which has its own engine and pump mounted in the rear compartment. Truck Engineering Co. designed and built it



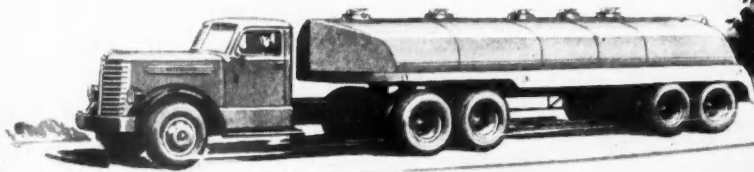
A complete line of musical instruments is carried in this body built by Proctor-Keeffe Body Co. for Grinnell. It is hardwood construction throughout with steel panels. There is 22 ft. behind driver's seat. Width 70 in.



A body of Lindsay structure assembled and equipped by Orrville Body Co. It has Broquinda refrigeration in the 10 ft. by 70 in. by 6½ ft. body

(TURN TO PAGE 64, PLEASE)

**From 2-Wheel Brakes
with "boosters" to
10-Wheel Brakes with Bendix B-K
Controlled Vacuum Power Braking
is a long, long way . . .**



and **BENDIX B-K**
has led every step!



So gradual has been the process of steady refinement through which power braking has passed, that many veteran truck men scarcely realize how far this famous life-and-property-saver has progressed. To thousands, Bendix B-K is still familiarly known as "the booster."

But bigger, heavier, vehicles, forced to ever-faster travel in ever-thicker traffic, have called for more and more power on the brake pedal, to reduce the driver's muscle-work. And on trailers, of course, "full power" braking units have always been necessary, since there is no mechanical connection with the tractor brake pedal.

Now, with ample reserves and time-proved reliability, the modern B-K Vacuum Power Brake installation demands from the driver virtually no physical effort, other than the little needed to operate the control valve.

Even this, in the eventual full development of B-K Controlled Vacuum Power Braking, will be absorbed. Braking application becomes merely a matter of moving the control, whether pedal or lever, to the point desired—an effortless operation.

Bendix B-K continues to pioneer, as it has through all the years, new refinements, new standards of efficiency and reliability.

**LOOK TO BENDIX B-K POWER BRAKING FOR
TODAY'S LEADERSHIP . . . and TOMORROW'S**

*Full Power is
on the way*

BENDIX PRODUCTS DIVISION OF BENDIX AVIATION CORPORATION, SOUTH BEND, IND.

BODIES—BODY MATERIALS—BODY EQUIPMENT

(Continued from Page 62)



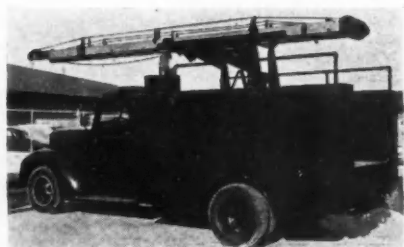
Montpelier calls this model the Mil-mont urban low floor type package delivery. A clear floor height except for wheelhousings is 20 in. from ground



Model 325 Montpelier side-aisle delivery unit. It has a sliding door over a running board entrance. Dimensions are 84 in. by 52 in. by 56 in.



Money travels in style with its chaprons. Proctor-Keefe body has ventilating and refrigerating system. Hardwood construction with steel panels outside and lined with bullet-proof steel. Glass is bullet-proof



McCabe-Powers body equipped with a ladder reaching 35 ft. high or out over parked cars. Is equipped with heater and hot and cold water for washing and rinsing lights, globes and fixtures



The Herman Body Co. electrically welded high tensile steel to make this public utility body. It has a 2-speed, reverse power take-off and a double universal drive. Mounted on Diamond-T



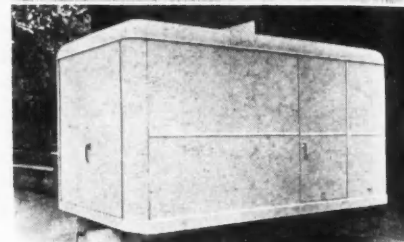
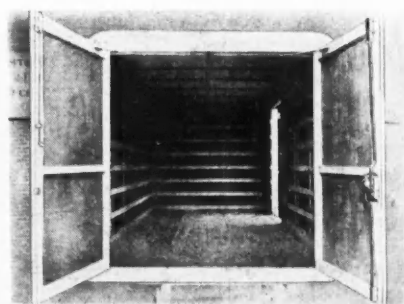
No screws, bolts or wood is used structurally in this Herman Body Co. creation. Electrically welded of high tensile steel, the walls are lined with three-ply veneer and floor is hardwood



This is the Orrville conversion of the International D-500 cab to accommodate a sleeper. The cab was cut, widened and elongated to make the unit



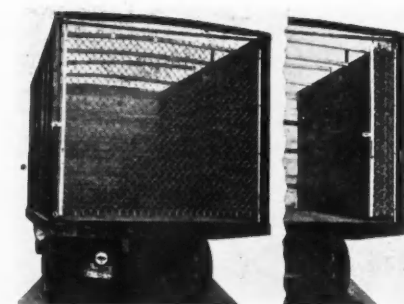
Heil built this 5000 gal. tank of 10-gage blue annealed steel. It has eight compartments of 625 gal. each with a 3 per cent expansion provision. It has one power and two hand pumps



The George Hirn Co. assembled this body in about 50 per cent of normal time and cut about 500 lb. from normal weight. Plymetl Panels and prefabricated Parrish Frame were used



The Gallion Allsteel Body Co. design for a dump body has full length running boards and side braces. The I-beam cross members are full width



This gate made by the Atlas Fence Co., Richmond St. & Castor Ave., Philadelphia, weighs about 90 lb. It is easily installed and easy to operate. It slides on a round track. It is built of No. 6 gage wire galvanized for long service

(TURN TO PAGE 66, PLEASE)

Farnsworth & Ruggles, of San Francisco, have been Exide users for more than forty years



...before 1910,
they equipped their
horse-drawn vehicles
with Exides!



Part of the fleet of 231 Exide-equipped vehicles of various types and sizes used by Farnsworth & Ruggles of San Francisco in their drayage and warehouse business.

"San Francisco is a compact city with heavy traffic—many starts and stops. We have practically no trouble. Exide Batteries have progressed to meet the needs of modern trucks. We find them eminently satisfactory."

Exide Batteries *have* progressed. You'll find striking proof of that in the 25% longer average life built into today's Exides—a feature that cuts battery cost per mile to a new low. These batteries are also available with wood and fiberglas separators for "cycling" service. See your Exide Distributor today, or write us for details.

THE firm of Farnsworth & Ruggles has been in the drayage and warehouse business for more than 82 years, and now operates a fleet of 231 Exide-equipped units in the San Francisco-Oakland area. Here is what Mr. George E. Hart, President, says about Exide Batteries—

"We have used Exide Batteries in our equipment for over forty years. At times we used Exides to furnish light for our horse-drawn vehicles prior to the time we installed motor vehicles in 1910.

"An Exide Battery was purchased for the first truck we owned, and we have continued to use Exides. We also use them in our Diesel-powered equipment.



THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

Exide
HEAVY-DUTY
TRUCK BATTERIES

BODIES—MATERIALS—EQUIPMENT

(Continued from Page 64)

"Pedaloc" Seat Swivel

Designed primarily for use on small delivery trucks, a new swivel seat pedestal has been placed on the market by the Eberhard Mfg. Co., Division of the Eastern Malleable Iron Co., Cleveland, Ohio. Known as the "Pedaloc," the new unit features a pedal which releases the swivel action. It



also may be tilted forward to give maximum clearance through the side doors. The seat spider is mounted on a bearing at the top of the pedestal and is held in the driving position by a key which engages slots in both the spider and the pedestal. The overall height of the unit is 10 in.

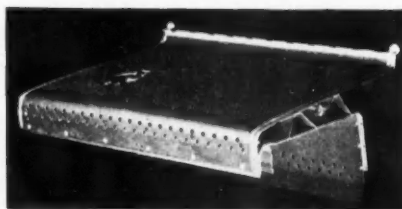
Crankless Window Regulators

Constant balance type window regulators are available for truck installation from Young Windows, 33 West 60th St., New York City. The regulator is of the crankless type, and is claimed to greatly reduce replacement expense, due to the absence of

racks, gears and cranks. Lubrication is unnecessary and vibration and wear are eliminated, according to the manufacturer. Glass breakage due to the window mechanism also is said to be eliminated.

Lightweight Paneling

Fybr-Tech, a veneer-cored panel with fiber resin-glued to both faces, has been placed on the market by Technical Plywoods, 228 N. LaSalle St., Chicago, Ill. The new panel is claimed to be lighter than ordinary plywood, moisture-resistant, and able to take a fine paint finish. Supplied in varying thicknesses, the material is said to take unusually sharp bends, making it suitable for dash boards, shelves, and for lining the interiors of trucks. The illustra-



tion shows a luggage rack constructed of Fybr-Tech, now installed in the new Greyhound coaches.

Toronto Star Body

(Illustrated on Page 47)

When the Toronto Star added new equipment recently, it went to General Motors Truck and bought eight COE chassis with hoods, windshields, doors and bumpers. The rest of the outfit was designed and built in the Star's own shop and fea-

tures the unusual rear-end platform, much needed in newspaper delivery.

Uprights of the rear section are channel steel to give utmost protection from rear end collisions. The lower panel, carrying the Star name, is pivoted in the center so that the top swings out to provide a slanting tail gate for easy loading. A flexible steel top panel slides down from the roof to give complete weather protection (except from sides). Special toe-room is provided so that helper can stand close when reaching inside the body. A 4000 lb. payload is standard.

(MORE BODIES ON PAGE 164)

GMC FOR '41

(CONTINUED FROM PAGE 38)

metal shield is installed at the front of the exhaust manifold to deflect the cooling blast and prevent the fuel mixture from chilling and condensing. It shortens the warm-up period.

The special carburetor has a nominal size of 1 1/4 in. instead of the standard 1 1/2 in. In addition it is fitted with jets calibrated for economy. The range of the automatic spark advance has been changed to suit the higher compression ratio, and hotter spark plugs are specified.

The result of all this is a claimed reduction in fuel consumption from 20 to 40 per cent. The power loss is only about 14 per cent. To reduce lubricating oil consumption, the oil level has been lowered 1 qt. to reduce splash.

This engine is available in the 1 1/2-ton models but it is specifically recommended in the 1/2-ton and 1-ton range.

New Truck Registrations by Makes by Months

		Auto-car	Brook-way	Chev-rolet	Diam-on-d T	Dodge	Fed-eral	Ford	G.M.C.	Hud-son	Inter-nat'l	Mack	Ply-mouth	Reo	Ster-ling	Stude-baker	White*	Willys	Misc.	Total
January	1940	143	117	15,997	563	4,345	153	13,222	3,142	56	5,538	572	718	11	22	85	434	173	326	45,650
January	1939	143	127	13,615	378	4,002	85	10,188	2,384	47	4,709	492	507	168	25	169	348	88	250	37,715
February	1940	94	92	14,145	425	4,341	113	12,092	2,724	60	5,009	425	767	4	31	101	380	182	351	41,336
February	1939	134	98	12,007	30	3,821	79	9,224	2,218	44	4,284	398	510	159	29	143	275	97	274	34,102
March	1940	137	123	18,398	573	5,356	161	14,983	3,457	76	6,943	534	949	6	24	154	660	233	316	53,093
March	1939	150	168	16,565	392	4,852	122	11,886	2,772	39	5,507	493	879	175	17	190	371	148	367	45,083
April	1940	156	102	19,429	563	5,654	152	15,444	4,071	92	7,049	656	1,070	7	35	133	840	222	307	55,982
April	1939	149	139	16,743	518	4,755	152	11,849	3,243	53	5,713	551	1,025	107	24	173	407	145	312	46,063
May	1940	158	143	13,962	501	5,459	151	13,816	4,334	92	6,743	756	1,065	6	25	112	631	225	374	51,553
May	1939	184	177	15,899	427	5,185	173	11,708	3,215	44	5,359	666	1,118	78	45	196	426	166	317	45,381
June	1940	127	121	14,246	533	4,412	116	11,647	3,357	67	6,291	561	902	20	30	103	574	188	209	43,504
June	1939	162	177	14,049	408	4,442	123	10,606	2,740	47	5,105	688	889	53	25	209	434	185	240	40,482
July	1940	160	153	16,384	642	4,731	121	14,447	4,252	64	7,104	718	999	78	28	77	476	248	231	50,913
July	1939	300	170	15,432	436	4,562	116	12,514	2,872	43	5,744	541	946	31	28	229	358	133	292	44,747
August	1940	112	137	17,053	587	4,724	121	12,370	3,900	34	7,397	661	685	93	30	92	470	214	290	48,980
August	1939	185	146	14,327	449	4,709	158	12,090	3,031	28	6,101	524	793	28	38	238	365	92	221	43,523
Eight Months	1940	1,097	988	132,614	4,360	39,022	1,088	108,101	29,237	541	52,074	4,893	7,155	225	225	857	4,465	1,685	2,404	391,011
Eight Months	1939	1,407	1,202	118,642	3,316	36,328	1,008	90,063	22,475	345	42,522	4,213	6,667	799	231	1,547	2,927	1,054	2,330	337,066
% Change, Eight Mos.		-23	-18	+12	+32	+7	+9	+20	+30	+57	+22	+15	+7	-72	-3	-45	+53	+60	+3	+18

FEDERAL

ANNOUNCES-4 NEW HEAVY DUTY Cab-Over-Engine Trucks

If you are searching for a new brand of low cost truck transportation coupled with outstanding "big truck" dependability, consider well the distinct advantages built into Federal's Heavy Duty Line of Cab-Over-Engine Trucks.

These new C. O. E. additions to the Federal Line are companion models to the present heavy duty 35, 45, 55 and 55-H Series with an established record for low cost operating reliability—low first cost economies. Their last word construction features offer practical, up-to-the minute transport advantages to the

truck user, including greater payload capacity, unexcelled maneuverability, shorter over-all length, rear opening cab doors, superior riding qualities, greater driving comfort, improved highway handling. As tractor-trailers, these heavy duty models offer a tried and trusted source of power combined with shorter over-all lengths. Because Federal builds everything from the 1½ ton to the highest tonnage capacity in Cab-Over-Engine Models, you can eliminate costly "hit-or-miss" truck selection. This spells bigger savings in service and greatly reduced operating upkeep. And these points can't be dodged by any price tag ballyhoo or glib performance promises!

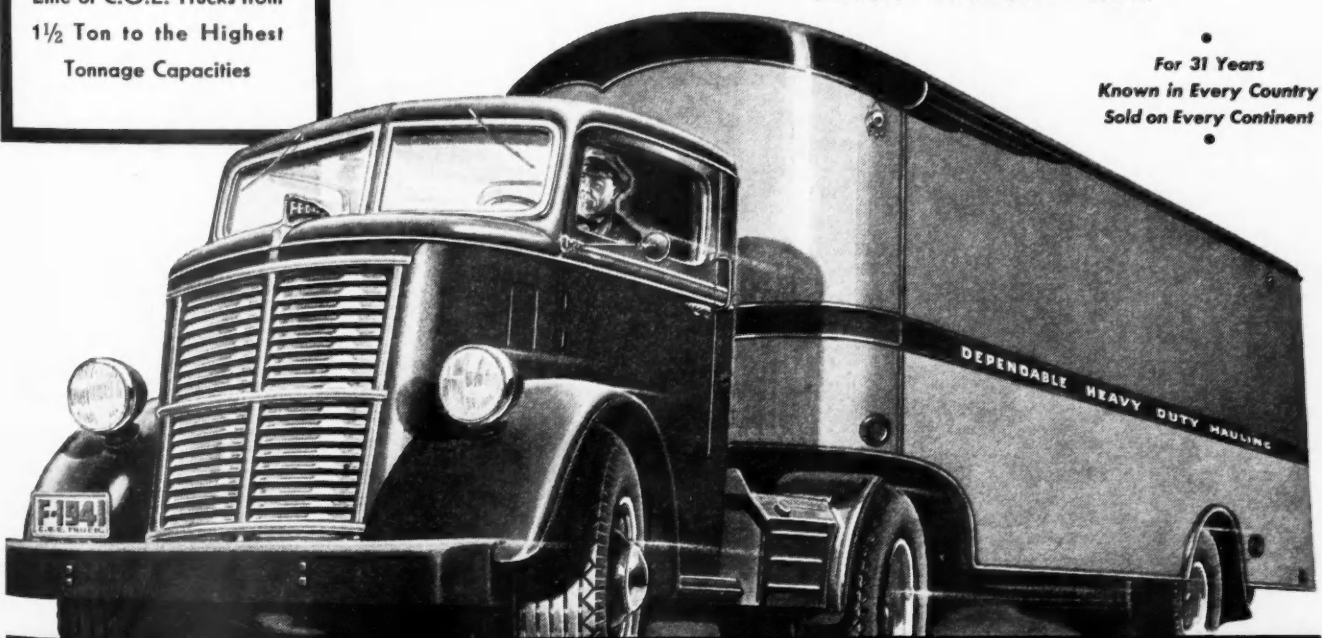
Test a C. O. E. Federal on the only proving ground that counts—*your job!* Check now with any Federal Dealer—or double check with our Sales Engineering Department for specific recommendations.

FEDERAL MOTOR TRUCK COMPANY
DETROIT • MICHIGAN • U. S. A.

SIZE	MODEL	PRICE
3½ to 5 Tons	90	\$2560
4 to 6 Tons	92	3095
5 to 6½ Tons	94	3645
5 to 7½ Tons	94-H	4125

Federal Offers a Complete Line of C.O.E. Trucks from 1½ Ton to the Highest Tonnage Capacities

For 31 Years
Known in Every Country
Sold on Every Continent



TON FOR TON IN '41—FEDERAL LEADS THE WAY!

NEWSCAST



ICC Finance Chief Recommends Approval of Eastern Merger

ICC approval of the application of Transport Co., New York, to acquire stock control of 23 eastern common carriers and outright purchase of Super Service Motor Freight Co., Nashville, was recommended early last month by J. Edward Davey, chief of the Bureau of Motor Carriers' Section of Finance.

At the same time Mr. Davey recommended denial of the application to acquire similar rights over six other carriers, all but one of which are contract carriers, on the grounds that dual operating authority would be contrary to the public interest. He also recommended denial of the request for "carte blanche" authority to effect singleness of title within a year of ICC approval but suggested that subsequent applications made by the end of 1941 might be made for such authority.

With regard to that part of the application pertaining to the acquisition of several truck leasing firms, Mr. Davey recommended dismissal on the grounds that none of these firms is a motor carrier and hence not subject to ICC approval.

Mr. Davey disposed of the monopoly contention with the statement that the proposed merger "would not result in an undue restraint of competition." He said there was a sufficiency of motor competition in the New England and Middle Atlantic states and that in the southern states, "strong competition would be furnished by rail carriers." In addition he cited Class II and Class III motor carrier competition in all regions as well as two-line service by a combination of Class I carriers.

According to Mr. Davey's recommendations the following common carriers would be included in the combine:

Arrow Carrier Corp., Paterson, N. J.; Atlantic States Motor Lines, Inc., High Point, N. C.; Barnwell Brothers, Inc., Burlington, N. C.; Brooks Transportation Co., Inc., Richmond, Va.; Consolidated Motor Lines, Inc., Hartford, Conn.; Davidson Transfer and Storage Co., Baltimore; Hampton Roads Transportation Co., Norfolk, Va.; The Wright Lines, Norfolk; Hor-

ton Motor Lines, Inc., Charlotte, N. C.; Kirby and Kirby, Inc., Trenton, N. J.; M. and M. Transportation Co., Somerville, Mass.; McCarthy Freight System, Inc., Taunton, Mass.; Middlesex Transportation Co., New Brunswick, N. J.; M. Moran Transportation Lines, Inc., Buffalo, N. Y.; Mundy Motor Lines, Roanoke, Va.; Niagara Motor Express Inc., Syracuse, N. Y.; Pyramid Motor Freight Corp., New York City; Rutherford Freight Lines, Inc., Bristol, Va.; Shein's Express, Inc., Trenton, N. J.; Smith and Solomon Trucking Co., New Brunswick, N. J.; Southeastern Motor Lines, Inc., Bristol, Va.; Super Service Motor Freight Company, Nashville; Transportation, Inc., Atlanta, Ga., and York Motor Express Co., York, Pa.

Likewise these contract carriers would be excluded:

Branch Motor Express Co., New York City; Miller Transport Co., Inc., Philadelphia; Motor Haulage Co., Inc., Brooklyn; United-Arbour Express, Inc., Hartford, Conn., and Freedman Motor Service, Inc., Elizabeth, N. J., and its common carrier affiliate, New York and New Brunswick Auto Express Co., Inc., Highland Park, N. J.

Reo Ends Trusteeship

Reo Motors, Inc., is now on its own, operating without benefit of a trustee who was relieved last month after two years of reorganization procedure. During that time Reo received an RFC loan of \$2,000,000, but it is understood that all creditors have been paid 100 per cent and that \$500,000 has already been paid back on the loan. Parts of its outmoded plant properties have recently been sold or leased which is expected to further improve the financial position.

Government orders totaling approximately \$158,900 were received by Reo Motors, Inc., during the first two weeks of October. Trucks in the new order will be equipped with Cargo or dump bodies, and most will be powered with the 310 cu. in. engine. A grand total of 306 Reo trucks has been ordered by the War Department.

Penna. Toll Highway Open

The 160-mile Pennsylvania Turnpike, new toll-charging super highway crossing the Allegheny mountains between Harrisburg and Pittsburgh, opened for traffic on Oct. 1. Official rates, ranging for through runs from \$1.50 for passenger cars to \$10 for truck-trailers of 39,000 lb. gross and over, follow the initial schedule set up by turnpike engineers. (See page 20, June issue.)

Driver Salesmen Exempt

"Driver salesmen," bona fide executives making not less than \$30 a week and employees in bona fide administrative capacities making not less than \$200 a month, need not be paid overtime after working 40 hours in a week, according to redefined regulations of the Wage and Hour Division of the Department of Labor, issued Oct. 14.

Getting Personal

Among the officers recently nominated by the Society of Automotive Engineers for the 1941 season are the following of special interest to fleetmen:

President, A. T. Colwell, Thompson Products, Inc.; treasurer, David Beecroft, Bendix Products Div.; vice-president (Transportation & Maintenance), T. L. Preble, Tide Water Associated Oil Co.; vice-president (Truck, Bus & Railcar), R. S. Reed, Brockway Motor Co.

Fred T. Merae, Jr., for the past five years White vice-president (of production) was just elected to new office of executive vice-president



George W. Malcomson, recently appointed assistant sales manager of Dodge truck division. For past two years he was Chicago regional manager



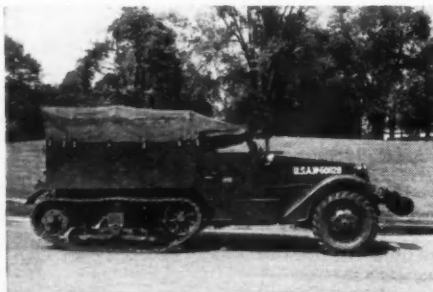
L. M. Oltman, former Dodge truck manager in Chicago, is now special truck representative of the factory truck sales force



New White Sales Division

Following close on the heels of recent announcements of its new Super-Powered line of motor trucks, The White Motor Truck Co. reports a new division of its sales territories, on the eastern seaboard. Following are the designations which will be used for the new territories together with personnel in charge:

Metropolitan Region (metropolitan New
(TURN TO PAGE 70, PLEASE)



First pictures of the new White army scout cars ordered in both half-track and four-wheel design to the tune of \$47,680,500. Out of the former may evolve a new vehicle for specialized civilian use—a truck with tractor ability



**LUBRI-ZOL improves
LUBRICANT MILEAGE
GASOLINE MILEAGE
OIL MILEAGE
for ROCHESTER BREWING CO.**

Mr. F. M. Strohm, Vice President of this company writes:

This, and similar reports from scores of fleets operating on Lubri-Zol, prove that the exclusive Lubri-Zol process gives even the best base stocks added values they could not otherwise possess. For example:

Lubri-Zol Fleet Oil develops a film strength much higher than untreated oils, and possesses both positive gum solvent and sludge inhibiting characteristics.

Lubri-Zol Chassis Lubricants are at least 500% stronger than non-treated greases, and in addition are water repellant and will not smack out from shock action.

Let us work with you to lower your costs. The services of a qualified fleet consultant are yours for the asking. Write today to—
The Lubri-Zol Corporation, Cleveland, Ohio.

● "Our 26 fleet units gross 350,000 miles a year with an average load of 10,000 lbs. per unit. Four years ago, before we used Lubri-Zol, we had a lot of trouble throughout the fleet—sludge, rapid bearing wear, foaming of gear lubricant, and oil leakage on wheels. Then we changed to 100% Lubri-Zol Fleet Lubricants. For four years now we've had none of these troubles. Sludge is no problem, there is no leakage of gear lube on brakes and housings, grease does not harden nor channel and our crankcases are much cleaner.

"On top of all this, our maintenance cost is down by 15%, we get 15% better lubricant mileage, 5% better mileage on oil and 15% better gasoline mileage because of better compression. We call that first-class performance."

*Buy your oil on
the cost per mile...
and save... with*

Fully Protected by U. S. and Foreign Patents

LUBRI

REG. U.S. PAT. OFF.

ZOL

NEWS—Continued from Page 68

York), supervised by Vice-President Harold Conner. Headquarters are at 370 Lexington Ave., and G. Taylor Myers is sales manager.

New England Region, directed by Vice-President J. E. Hamlett at Boston.

Eastern Region (Newark, Philadelphia, Baltimore, Washington and Wilkes-Barre), headed by Vice-President E. F. Hobbins from headquarters in Philadelphia. He will be assisted by R. T. Fullerton, Newark; J. B. Franks, Philadelphia; E. R. Kinnebrew, Washington, and C. O. Tydings, Baltimore.

V. W. Fries, former New York district

manager, has been named vice-president of a new division to handle White Horse sales in the New York area.

Industrial Highlights

Bendix-Westinghouse Automotive Air Brake Co. is soon to move its general offices and main factory from Pittsburgh, Pa., to a new tract in Elyria, Ohio, according to an announcement from L. W. Morrison, vice-president and general manager. Actual construction of the new plant is to begin within the next few months.

General Motors will take its "Parade of Progress" on a tour of the nation shortly, transported in a brand new fleet of giant

streamlined trucks, not the least interesting feature of which will be a second story "Pilot House" from which the trucks will be driven. The show will consist principally of the various scientific shows featured in the corporation's two World Fair exhibits.

Supplementing its original announcement of extensive price reductions, as reported here last month, Mack Trucks, Inc., has issued the following comparative price schedule, f.o.b. the factory. Cab, body and taxes are extra.

Model	Old Price	New Price
ED	\$675	\$625
DE	790	735
EEU	1,180	1,125
EFU (Cab-over-engine)	1,390	1,335
EGU	1,690	1,635
EHU	2,320	2,265
EMU	2,720	2,665
EQU	3,220	3,165

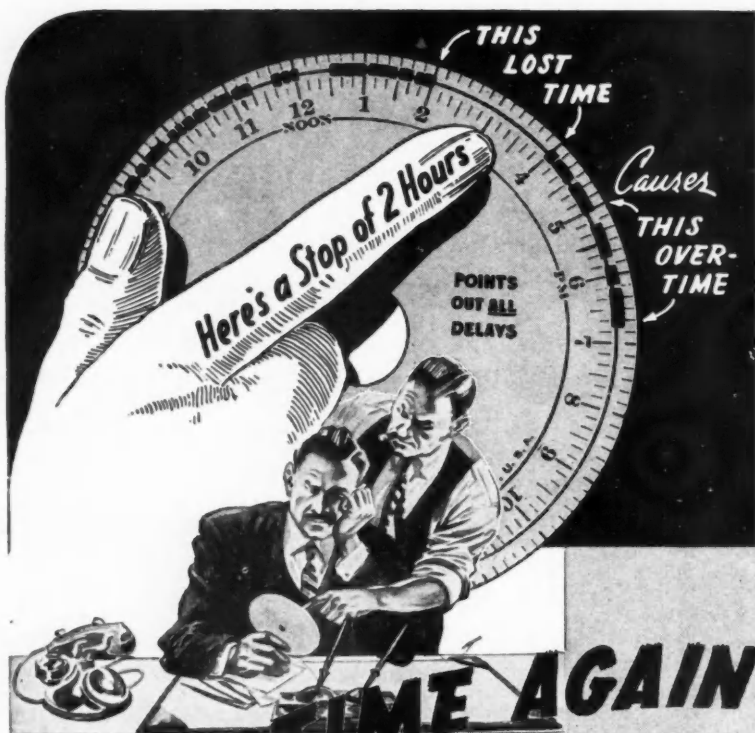
Gramm Motor Truck Corp., Delphos, Ohio, is getting started on an initial War Department order of 61 van-type trailers for use by the Quartermaster Corp. They are of large capacity and will be of the square-front-end type without side doors. Gramm was among the first to produce the Liberty trucks during World War I.

A new War Department order of \$9,553,766 boosts Autocar's total from this source to \$16,824,869. All of the order is for half-track scout or personnel cars. Production is expected to get under way in February or March and will continue for approximately one year.

Motor Improvements, Inc., long identified as the makers of Purolator oil filters, has recently changed its name to Purolator Products, Inc. No organization change has been made. At the same time, the company reports a new all-time high in sales figures for the first eight months of 1940.

Sole control of the Acheson Colloids Corp. was acquired recently by Howard A. Acheson from the Acheson Co. of New Jersey. The move marks the complete severance of the Colloids division from the parent company.

Mr. Acheson, who has served as president of the Colloids Co. since 1929, was elected president of the new company, incorporated in Michigan. Margaret M. Acheson, widow of Edward Goodrich Acheson, is chairman of the board.



"OVERTIME AGAIN!"
"And right here's the reason for it!"

"See where the truck stood still for two whole hours? From 2:00 to 4:00 she never turned a wheel."

"No wonder there was overtime!"

Righto. So don't have your trucks working after hours when they could finish everything during hours.

The Servis Recorder DISCOURAGES that kind of Idle Time that causes expensive and unnecessary Overtime—because its chart tells you the whole situation at a glance.

Write for free Booklet: "Ten Ways of Getting More Work Out of Motor Trucks." THE SERVICE RECORDER COMPANY, 1375 Euclid Avenue, Cleveland, Ohio.



The Servis Recorder
 Tells Every Move Your Truck Makes



Consolidated Freightways, Inc., Portland, Ore., designed and built this job from the ground up. Features include light-weight aluminum and steel construction, 22 ft. truck and 28-ft. trailer bodies, 200 hp. diesel engine, and 2700 in. of braking surface

"A.W." *Quality* PRODUCTS *from Mine to Consumer*

Carbon, Copper or Alloy Steels—in any Open Hearth analysis, in any quantity—to meet your specifications... Welding qualities, toughness, abrasion resistance, ductility... There is an "A.W." Steel made to Alan Wood standards that will give you best results at the lowest possible cost.

"SWEDE" PIG IRON

Foundry, Malleable and Basic.

INGOTS

Standard and special sizes in any Open Hearth analysis.

BLOOMS, BILLETS AND SLABS

Alloy and Carbon Grades. Forging and Re-rolling Qualities.

SHEARED STEEL PLATES

Special Alloy, Tank, Ship, Boiler, Flange, Fire Box, Locomotive Firebox, Structural and Dredge Pipe.

HOT ROLLED SHEETS

All qualities, special Alloy, Annealed, Blued Finish, Hard Red, Pickled, or Deoxidized.

FLOOR PLATES

For every kind of flooring condition: "A.W." Super Diamond, Standard Diamond, Diamondette, Sunken Diamond and Ribbed Patterns. Any pattern furnished in ferrous or non-ferrous analysis.

STEEL CUT NAILS

"Reading" Brand—all types and sizes.

ALAN WOOD STEEL COMPANY

MAIN OFFICE AND MILLS, CONSHOHOCKEN, PENNA. : SINCE 1826 : DISTRICT OFFICES AND REPRESENTATIVES—Philadelphia, New York, Boston, Atlanta, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, New Orleans, St. Paul, Pittsburgh, Roanoke, Sanford, N. C., St. Louis, Los Angeles, San Francisco, Seattle, Montreal—A. C. Leslie & Co. PRODUCTS INCLUDE—Steel Products in Carbon, Copper or Alloy Analyses : Sheared Steel Plates : Hot Rolled Sheets and Strip : "A.W." Rolled Steel Floor Plates : Billets, Blooms and Slabs : "Swede" Pig Iron : Reading Cut Nails.

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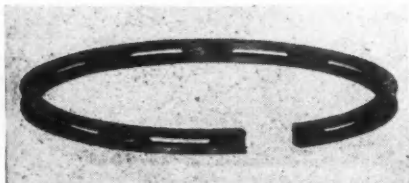
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SHOWCASE OF NEW PRODUCTS REPLACEMENT PARTS ACCESSORIES, ETC.



Sealed Power RT-20 Ring

Claiming "quick seating" and forced lubrication among its features, an oil control ring known as RT-20 has been put on the market by the Sealed Power Corp., Muskegon, Mich. Radius turned contact lands are said to form an "oil wedge" between the ring and the cylinder wall, providing forced lubrication to the high unit pressure area. Due to the large arc forming the radiused lands, only .002 in.



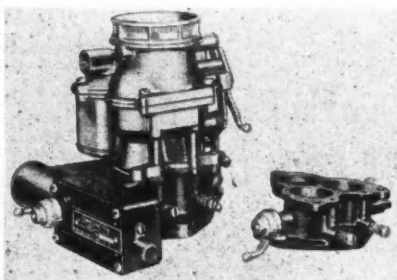
wear can occur on the radial thickness of the ring before the full land area is presented to the cylinder wall. The symmetrical design allows the ring to be installed with either side up.

"Gas Master" Price Reduced

Improved production methods have made it possible for Highway Equipment Co., Inc., Oak and Harrison Sts., Michigan City, Ind., to reduce the price of its "Gas Master" Control Valve to \$4.50 f.o.b. Michigan City, from its former price of \$7.50. Designed for instrument panel mounting in transport trucks equipped with one, two three or four gasoline supply tanks, the "Gas Master" is equipped with an indicator dial numbered from one to four, controlling four inlets and telling the operator at a glance from which tank he is drawing. The unit still carries an unconditional "money-back" guarantee.

Pierce Vacuum Governor

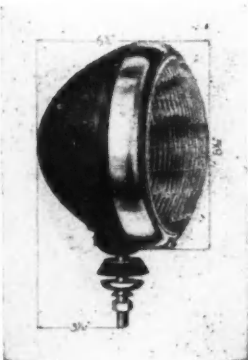
A new vacuum governor, designed to replace the standard throttle body of Ford V-8 engines and to become a part of the carburetor, has been developed by the Pierce Governor Co., Anderson, Ind. The new unit, known as the Seal-Aire, has a single butterfly valve shaft for driver and governor operation of the Duplex valves. The driver may accelerate the engine only to a predetermined speed, at which point



the governor comes into operation. The housing and throttle box of the unit is of cast iron. Illustration shows the Seal-Aire governor installed on the Ford carburetor, also the standard throttle body which has been removed.

New Arrow Headlamp

Arrow No. 775-H type headlamp, designed for universal application and equipped with all glass sealed beam lamp, is being offered by the Arrow Safety Device Co., Medford, N. J. The unit can be used on any vehicle having a vertical mounting, either ball type or S. A. E. cup type mountings. Finished in a bright baked enamel, or in chromium, the new lamp is also available with parking light when desired.



Goodrich Offers Anti-Freeze

A new ethylene glycol anti-freeze compound known as "Stet" is now offered by the B. F. Goodrich Co., Akron, Ohio. Of lutely odorless, the new compound will the permanent type and said to be abso-not evaporate nor boil away and contains inhibitors to prevent rusting. It is said to have no effect on car finish and to mix readily with other ethylene glycol anti-freezes.

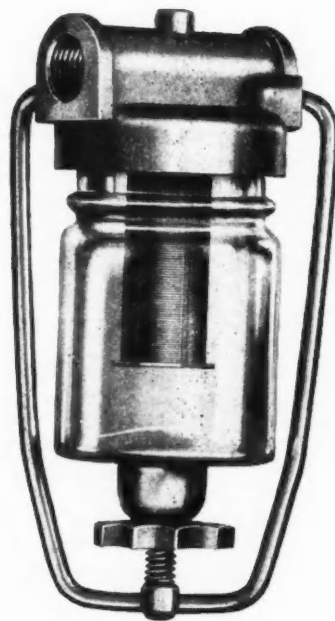
Driving and Passing Lights

Lorraine Model 85 Driving and Model 87 Passing Lights are now available from the Appleton Electric Co., 1701 Wellington Ave., Chicago, Ill. Featuring a spring assembly for quick replacement, the lights are provided with a four-terminal switch and necessary wiring harness for connection with the headlight system. The lights are equipped with Westinghouse Glaseal units, but any standard sealed unit is interchangeable. A pair consisting of one driving and one passing light, complete with switch, lists at \$10.00. A similar lamp equipped with amber or clear Glaseal unit for fog-light service is also available.



AC Gas Strainer

A new gasoline strainer has been announced by the AC Spark Plug Division of General Motors Corp., Flint, Mich. The straining element, contained in a heavy glass bowl, is composed of a stack of self-spacing brass discs with openings of two-



thousands of an inch. It is said to be easily installed at the carburetor inlet without interfering with other motor accessories. The device is designed in two types, one for cars and one for trucks.

South Wind Line Enlarged

Models 781 Senior and 780 Special have been added to the 1940-41 line of South (TURN TO PAGE 74, PLEASE)

Pierce Seal-Aire

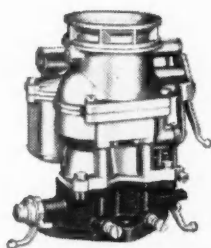


A Tried and Proved New Governor for Ford V-8 Engines

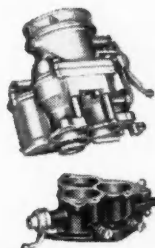
This unusual Seal-Aire Governor of the automatic type for Ford V-8 Engines replaces the standard throttle body, and actually becomes a part of the carburetor.

The Governor, which has a warp-proof cast iron housing and throttle box, has but one valve shaft for driver and governor operation of the duplex valves. The driver can accelerate or decelerate the engine at will, but can accelerate only up to the point of governed speed where the Governor takes charge of the engine.

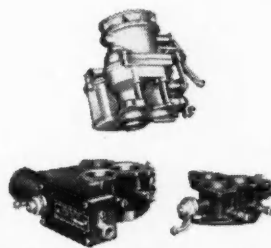
The governing is cushiony . . . smooth . . . yet positive. Drivers like it for this reason. Yet the Governor has been constructed so that it cannot be cheated by throttle manipulation, while it has no outside vents with which to tamper. At the governed speed the Seal-Aire Governor is uniformly responsive to every change in load.



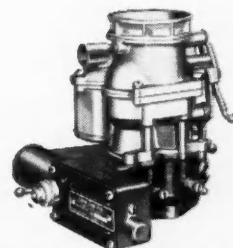
● Carburetor and standard throttle body.



● Throttle body is detached from carburetor.



● Seal-Aire Governor replaces throttle body.



● Seal-Aire Governor Installed. Throttle body discarded.

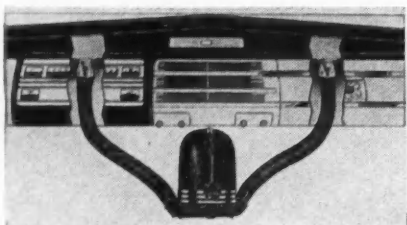
Write for literature on Seal-Aire and other Pierce Governors for automotive vehicles

THE PIERCE GOVERNOR COMPANY
WORLD'S LARGEST GOVERNOR BUILDERS ♦ ANDERSON, INDIANA, U.S.A.

SHOWCASE

(CONTINUED FROM PAGE 73)

Wind gasoline car heaters manufactured by



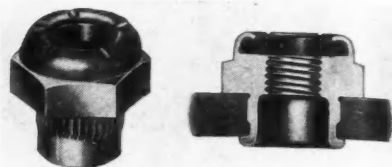
the Stewart-Warner Corp., 1826 Diversey

Parkway, Chicago, Ill. A new defrosting system has been perfected for use with these new models. The South Wind unit gives out heat through the process of burning gasoline vapor, obtained from the engine carburetor, under a partial vacuum. The hot vapors pass into a heat chamber which in turn heats air passing around it and into the car. A two-speed motor rotates the fan. The unit is claimed to reach full heat output in 90 seconds from a cold start.

Self-Locking Clincher

A clinch type, self-locking nut has been developed by the Elastic Stop Nut Corp.,

2230 Vauxhall Road, Union, N. J., as an addition to its line of Elastic Stop Nuts. Primarily designed for fastening removable cover plates, inspection doors, etc.,



the new nut incorporates the resilient locking collar common to the Elastic Stop Nut line, which forms a tension between nut and bolt threads and provides a moisture-tight seal around the bolt. The shank of the new nut is splined to engage the bore of the hole.

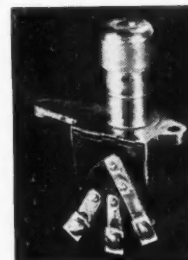
K-D Dual Purpose Lamps

A group of three lamps, designed for either clearance or marker purposes, has been developed by the K-D Lamp Co., Cincinnati, Ohio. Suitable for flat or corrugated surface mounting, the lamps have self-retaining lens and gasket and come in a variety of finishes. Model 539 is circular in shape, 540 is tear-shaped while Model 541 is oblong (illustrated). All meet standard lighting requirements.



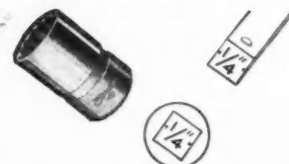
Delco Foot Switch

Incorporating a one-piece case housing for maximum strength, a new foot dimmer switch has been announced by the Delco-Remy Division of General Motors Corp., Anderson, Ind. The back plate is formed of an insulating plastic. It is fitted into the case with a gasket, and the case is crimped down over it to form a weather-proof covering, said to protect the operating parts from splash, dirt and slush.

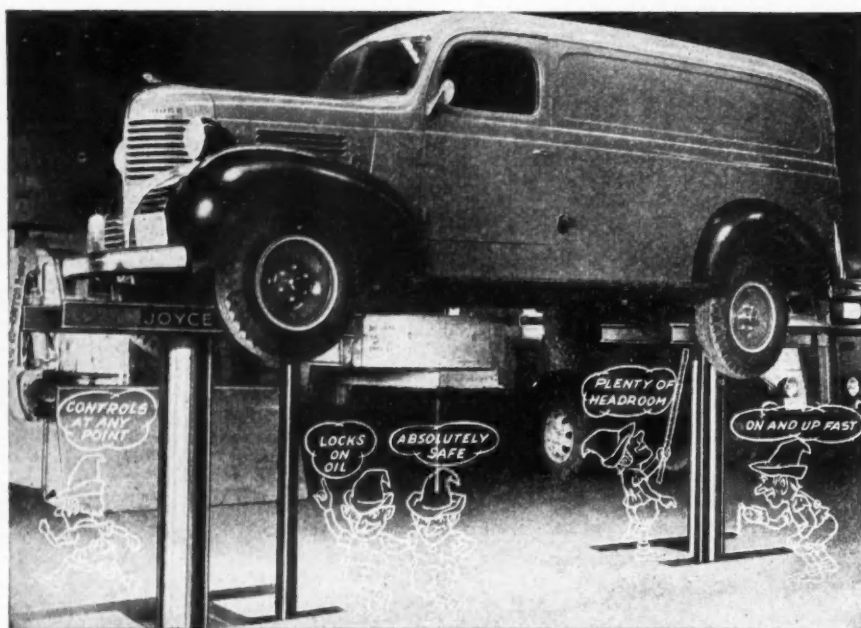


Change in Drive Size

A change in the size of drive in its Midget pattern has been announced by the J. H. Williams Co., 225 Lafayette St., New York, manufacturer of detachable "Supersocket" wrenches. Socket wrenches and parts in this classification now are being



made with 1/4 in. square drive, in place of the 9/32 in. square drive. Old and new sockets and parts may be interchanged by means of suitable adapters. (TURN TO PAGE 76, PLEASE)



THEY'RE TELLING YOU . . .

"JOYCE LIFTS ARE THE BEST"

A smart fleet operator has only to be told, not "sold", these important points about Joyce Two-Post Truck Lifts:

Automatic Wheelbase Adjustment: Which eliminates necessity for adjusting piston to length of vehicle and saves time spotting truck over Lift. Accommodates trucks of any length.

Maximum Underbody Clearance: Which permits quick inspections of underbody mechanism; ample head and elbow room, and nothing to interfere with dropping pancake engines, drive shafts or transmissions.

Direct or Remote Control: Which allows operating control lever to be located at any convenient point in shop.

Absolute Safety: Because Lift is locked on oil.

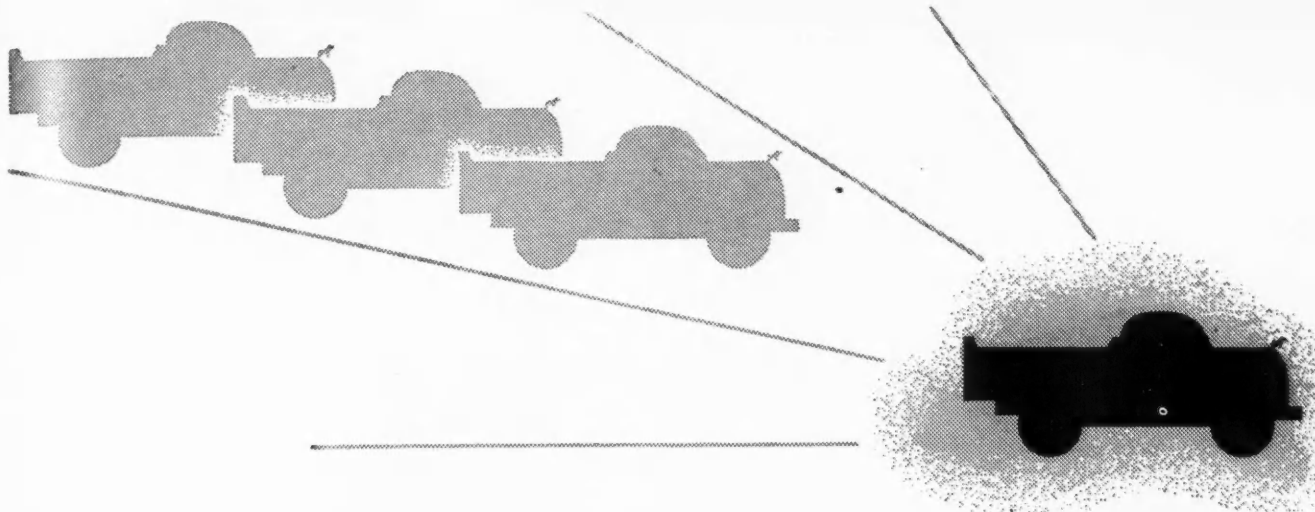
Smooth, Fast Operation: Because of unusually long bronze guide bearings and close machine tolerances. Load lowers readily, easily, smoothly, with no binding.

Get Joyce Bulletin No. 158 for details of most complete line of quality Truck Lifts.



THE JOYCE-CRIDLAND CO., Dayton, Ohio

JOYCE LIFTS AND JACKS



THE MOST COPIED TRUCK IN AMERICA MOVES FURTHER AHEAD OF THE FIELD

SINCE the turn of the century Mack has concentrated its entire energies and resources on the production of motor trucks, buses and fire apparatus. This specialization has resulted in so many major improvements that Mack has consistently maintained its position as the most copied truck in America. Here are the latest of Mack's sensational developments.

DIESEL POWER. Mack Diesel engines use the patented Lanova system of "controlled combustion." Combined with Mack efficient design this feature assures greater power—more economy.

THERMODYNE ENGINE. This powerful new engine—hailed as the most outstanding advance in truck power of recent years—has greater thermal and mechanical efficiency, gives more economical operation.

DUPLEX TRANSMISSION. Gives ten speeds forward and two reverse without the complications of auxiliary transmissions or two speed rear axles. Note especially these outstanding advantages. *Tetrapoid gears*—with a new tooth design for greater strength and durability than was ever before thought possible. *Involute Splines*—for more precise fit and strength. *Stiffer Box*—for extra stamina and longer life. *Scientific Ratio Steps* for better performance and economy.

While other makes are catching up on these Mack advances, Mack will be blazing new trails.

P.S. Right now Mack is also setting the pace in Marine Diesel development.

MACK TRUCKS, INC.

NEW YORK, N. Y.



THE MOST COMPLETE LINE OF TRUCKS IN THE WORLD • 1 TO 45 TONS

SHOWCASE

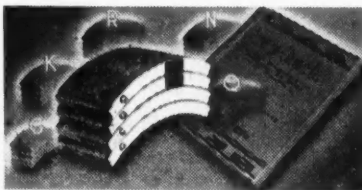
(CONTINUED FROM PAGE 74)

Grey-Rock Brake Blocks

Grey-Rock Blocks, a medium friction, rigid molded segment, and Hiway Blox, a higher friction, rigid segment of hydraulically compressed and heat treated woven block, are available from United States Asbestos Div., Raybestos-Manhattan, Inc., Manheim, Pa. Both are designed to provide balanced braking on any type vehicle.

For vehicles using 3/4-in. material, types G, K, R, N and Q Grey-Rock Blocks are

available (illustrated). Information concerning the installation and servicing

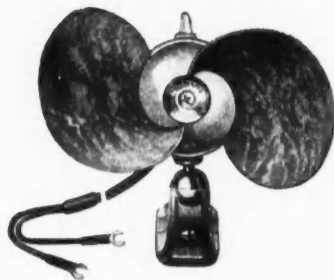


brakes of all types is found in the Grey-Rock Guide and Service Manual.

Fulton Defrosting Fan

Featuring two soft rubber blades and a

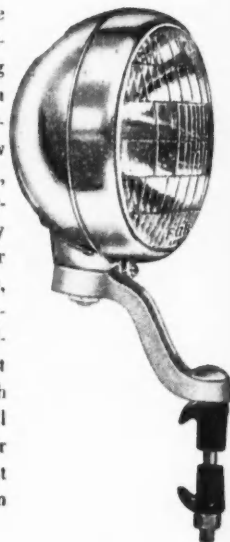
2-speed motor, No. 496 fan is the latest development of the Fulton Co., 1912 S.



82nd Ave., Milwaukee, Wis. By means of a chrome-plated flexible strap, the universal bracket may be attached on the steering post, the instrument panel or on the windshield dividing post. The motor draws approximately 2 1/2 amperes on high speed. The unit is available at \$4.15 for the 6-volt type, or \$4.65 for the 12-volt type.

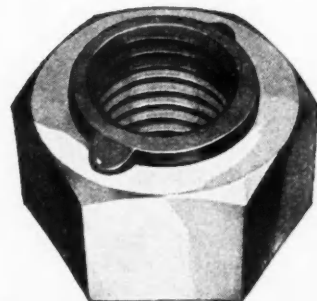
Arrow Fog Light

Employing the all-glass sealed Mazda lamp, a new fog light has been placed on the market by the Arrow Safety Device Co., Medford, N. J. Furnished in two body styles with either amber or clear lens, the light is equipped with a fully-adjustable bracket and a fused dash switch with tail light hook-up, for pairs of lights. List prices range from \$5.25 to \$6.00.



New Locking Principle on Nut

A new locking nut using a slightly oval shaped spring-steel retainer as a gripping element, is being manufactured by Security Metal Products, Inc., 344 East Kalamazoo Ave., Kalamazoo, Mich. When the nut is applied, the retainer is distorted from the elliptical shape to a circular shape, thus setting up a spring pressure between the bolt threads and the



retainer threads. Neither set of threads is said to be damaged in applying or removing. It meets thread-pitch tolerances of National Screw Thread Commission.

WHO IS DRIVING YOUR TRAILER?

Who is responsible for the safety of your pay load?

You can depend on the A.S.F. fifth wheel to do its duty, never to shirk its responsibility.

Write us about the new tilting type fifth wheel in—

- 30 inch
- 33 inch
- 36 inch

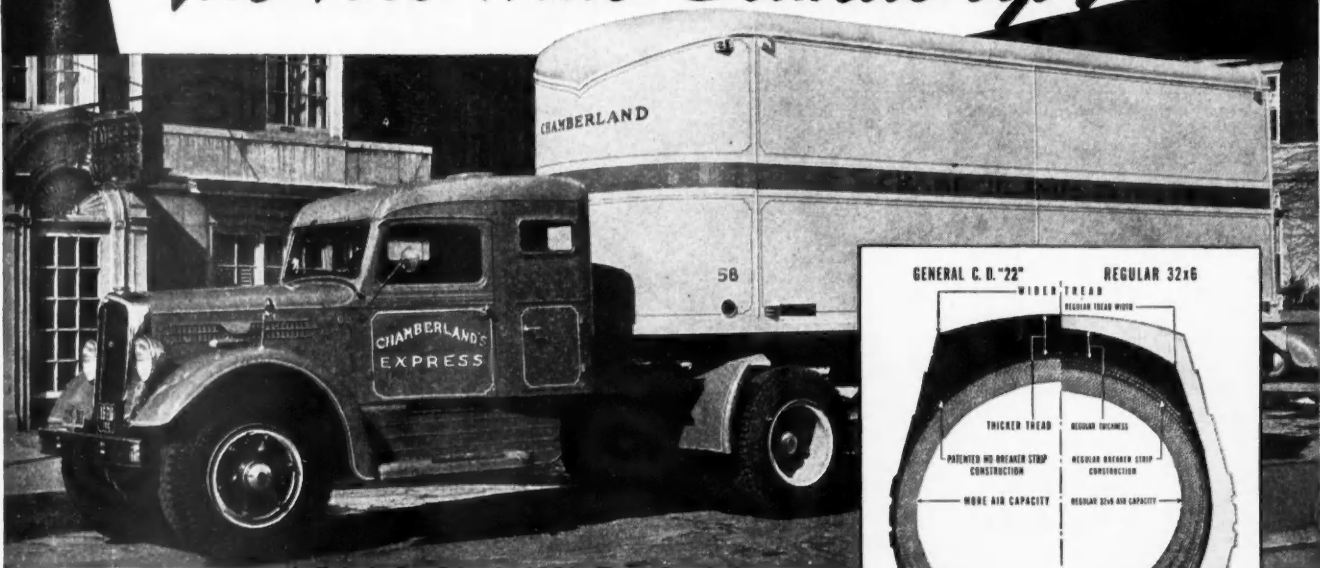
Sizes just added to our line

AMERICAN STEEL FOUNDRIES
EAST CHICAGO, INDIANA

PLAY SAFE WITH THE

A-S-F FIFTH WHEEL

IN TEST AFTER TEST
THE GENERAL CD STANDS OUT AS
The Tire That Stands Up!

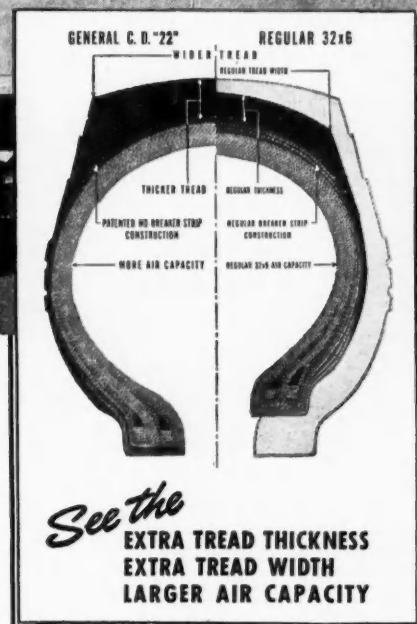


Whether the test is for long mileage, frequency of tire failure, or cost per mile, invariably the General CD stands head and shoulders above any other truck tire. Backed by the experience of hundreds of America's cost-minded operators, the statement that *the CD is the dean of all truck tires* is no exaggeration, but a proved fact.

For example, take Chamberland's Express, Schenectady, New York, which hauls heavy loads to New York City and west to Rochester, New York, day in and day out the year 'round. A total of 68 CD 47's on this fleet have proved their superiority over all previous tires. Not one CD 47 has failed since they were installed on the fleet.

General welcomes comparison tests

THE GENERAL TIRE & RUBBER COMPANY • AKRON, OHIO



by users of the CD, because invariably the results are the same. The CD's entirely new principle of construction gives far greater mileage, amazing puncture resistance, and 50 to 100% greater return on the difference you pay. Have your General dealer fit a set of CDs to one of your trucks. Test them on your toughest run. Then *you* be the judge.

Copr. 1940, The General Tire & Rubber Co., Akron, O.

The **GENERAL C.D.**

AVAILABLE FOR TRUCKS FROM 1/2 TON TO 10 TONS CAPACITY

MAN-MADE BARRIERS

(CONTINUED FROM PAGE 19)

into high gear huge shipments of supplies and materials will have to be sped to factories and plants. Finished products will have to be rushed to where they are needed.

No single transportation agency could handle this tremendous job alone. The inability of normal peacetime railroad facilities to meet the needs of a war emergency was proved conclusively in 1917. When the rail-

roads faltered under the heavy burden, trucks were pressed into service and helped relieve the traffic jam.

Transportation conditions today are quite different than they were in 1917. The country's truck fleet of 4½ million vehicles is the largest in the world; larger, in fact, than the fleets of all other nations combined. This growth was built on the fast, flexible and economical service of motor transportation. These same three features are vital in preparing for defense.

Of even greater importance is the role of motor transportation in actual combat. Within 25 years, motor transportation has revolutionized warfare. In 1916, when the United States undertook a military campaign against Villa in Mexico, we had fewer than a dozen motor trucks in the whole army. In preparation for that expedition, about four thousand trucks were hastily gathered at the border. When the order came to advance they dashed into Mexico at unprecedented speed. Before the campaign ended at least half of the four thousand vehicles were out of commission, but we had learned that the motor truck was a useful piece of military equipment and that special organization and training was necessary to make it more serviceable.

The lessons of the Mexican campaign were used to good advantage a year later in France. Allied commanders were unstinting in their praise of motor transport as a fighting arm and many of them regarded it as the deciding factor in the war.

Vivid accounts of Germany's smashing drive into Poland, Holland, Belgium and France are too recent to require much elaboration. The devastating work of the Nazi mechanized divisions, followed promptly by swift-moving motorized troops, astounded military men the world over. It must be remembered, too, that the advance of tanks and troop trucks could not have been accomplished without fast commercial-type trucks to maintain the vital communication lines.

The importance of commercial trucks has been recognized by U. S. Army officials, and actual tests were made last May during maneuvers of 70,000 troops in East Texas and Western Louisiana. The Red Ball Motor Freight Lines, of Dallas, was engaged to keep the troops supplied. They did yeoman service. Each day, Red Ball carried the troops 100,000 pounds of ice; 330,000 pounds of fresh meat; 816,000 eggs; 38,000 pounds of bacon; 9000 pounds of cheese; 70,000 pounds of onions; 28,000 pounds of lard substitute; 25,000 cans of evaporated milk; 100,000 pounds of sugar; 16,000 pounds of salt; 9000 pounds of crackers; 5000 cans of salmon; 350,000 pounds of flour; 5400 pounds of rice, and 2000 quarts of vinegar.

(TURN TO PAGE 80, PLEASE)



Whether you buy light, medium, or heavy trucks, of any make, YOU CAN'T MISS saving dollars and providing more driver comfort, more safety, when your trucks have HAIRFLEX seats.

Long-lasting HAIRFLEX cushions are millions of curled hairs bonded together by live, latex rubber. They're non-lumping, non-

shifting, non-matting.

Their long life keeps trucks away from seat repair shops—out on the highway rolling in the dollars. Their resilience provides a contour-fitting cushion that relaxes drivers—tends to eliminate fatigue—lets them drive safer! So remember to specify HAIRFLEX for more comfort, safety, economy.

Drivers Sit IN, Not On HAIRFLEX

Armour and Company
Curled Hair Division
 1355 W. 31ST STREET CHICAGO, ILLINOIS

AUTOMOTIVE ENGINEERS SAY:



"They are simple in design
and **THOROUGHLY
ENGINEERED**"

THOSE WHO
**KNOW
POWER
BRAKES**

MAINTENANCE MEN SAY:



"They require less
attention and are
EASIER TO SERVICE"

Choose
MIDLAND

TRUCK and TRAILER
MANUFACTURERS
SAY:

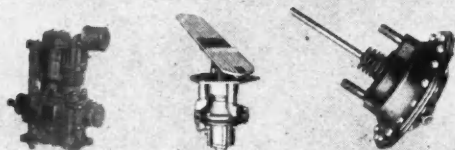
"They meet our own
**HIGH STANDARDS
of PERFORMANCE**"

TRUCK
OPERATORS SAY:

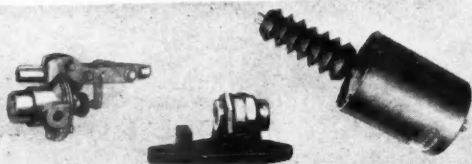
"They are more
**DEPENDABLE and
EASIER TO OPERATE**"

Complete **KITS** available in
both **AIR** and **VACUUM** for Ford, Dodge,
Chevrolet, G. M. C. and International

"CONTAIN EVERY NUT, BOLT AND SCREW NEEDED!"



AIR: Showing the 7.3 C. F. Compressor, fully compensating foot control valve and diaphragm chamber contained in Midland Air Brake Kits.



VACUUM: This reaction type control valve, check valve and cylinder are a part of Midland Vacuum Brake Kits.

Whether you use AIR or VACUUM, you'll want these advantages of MIDLAND POWER BRAKE EQUIPMENT

Careful Engineering, simplicity of design and ruggedness of construction explain why Midland Power Brake equipment offers you longer, trouble-free operation at lower cost. Every day, more and more fleet operators are specifying MIDLAND and getting these important features:

AIR BRAKES: Big, self-lubricated 7.3 cu. ft. compressor that practically doubles the air capacity usually furnished. Fully compensating foot control valve that releases any desired air pressure without fanning the pedal. Super power with Midland's power units—your choice of either cylinders or diaphragms.

VACUUM BRAKES: Reaction type control valve that has real pedal "feel." Self-lubricated, full size cylinder. Interchangeable in fleet operation.

Both types are backed by Midland's famous "Factory Rebuilt Exchange Plan" that assures long-range economy. Sold and serviced by a nation-wide network of Midland Distributors. Write today for complete information and prices.

THE MIDLAND STEEL PRODUCTS CO.
10605 Madison Avenue • • • Cleveland, Ohio
Export Department—38 Pearl Street • New York City



MIDLAND POWER BRAKES
(CHRISTENSEN)



MAN-MADE BARRIERS

(CONTINUED FROM PAGE 78)

Besides the rations, there were 900 tons of hay required; 1,500,000 pounds of oats; 61,000 pounds of bran; 200 cords of wood; 500,000 gallons of gasoline; large quantities of oil, greases, gas masks, smoke-pots, war chemicals, ammunition, hospital equipment, beds, radios, telephones, clothing, motor parts, veterinary supplies and candy. Wiring for the communications system, covering 1200 miles and weighing 130 pounds to the mile, also had to be carried by truck to the field.

Because of their size, the Red Ball trucks, 30 of which were in constant use, had distinct advantages over the much smaller Army supply trucks. Only three Red Ball trucks were required to supply a division of 8000 men, while for the same job 24 Army trucks would have been necessary. This resulted in definite savings; fewer drivers were needed; servicing reduced to a minimum.

General Hugh S. Johnson, in a recent syndicated newspaper article, stated:

"Our new and only partly motorized Army is writing a terrible record of delays and breakdowns due to half-trained drivers and repair and service departments. . . . The record of experienced civilian bus and truck systems in economy, efficiency and maintenance shows remarkable performance—averages of 75,000 to 100,000 miles of highway operation without mechanical delay."

The difference, of course, is experience. An efficient truck operation cannot be developed overnight. Commercial truck drivers are experts. Their vehicles are kept in excellent condition by scientific application of tried maintenance methods. The trucking industry is anxious to give its experience and its service to the nation.

General Johnson urged that the nation's plans for defense should be integrated closely with the existing commercial system of motor transport. This is not being done, he asserted, "because the Quartermaster General of the Army has a joint military passenger agreement with the railroads which is practically exclusive of the use of automotive transport."

"One reason advanced by the

Quartermaster General for refusal to change that bone-headed senility is that the joint military passenger agreements have been in effect between the railroads and the War and Navy Departments for over a quarter of a century," Gen. Johnson continued.

"So had the French military methods, which the German swift-moving motorized attack smashed in a few weeks, been used for over a quarter of a century. This reason reveals the typical dry rot of the crustacean bureaucracy which is so dangerous in this swiftly moving warlike world."

There is another factor that has prevented full utilization of motor transport in the defense program. For years, trucking concerns have been required to submit bids on virtually all hauling jobs for the War Department and other Government agencies. The railroads, on the other hand, have not been required to go through the bidding procedure because they were under Federal regulation and maintained published rates for their service. As a result, railroad service has been used almost exclusively by the Government ostensibly to avoid delays occasioned by examination of bids and awarding of contracts to trucking companies.

There might have been some justification for this kind of discrimination prior to 1935. In that year, however, motor carriers also were placed under Federal regulation—a type of regulation which, according to the Interstate Commerce Commission, was more comprehensive than that governing the railroads. Motor carriers, like the railroads, were required to maintain published tariff rates for their service. Still, trucking concerns were required to bid on Government traffic, despite their demands for equal treatment with the railroads. Finally, the question was placed squarely before the U. S. Comptroller General in October, 1938. In a formal interpretation of Section 3709, U. S. Revised Statutes, which governs letting of Government contracts, the Comptroller General ruled that motor carriers must continue the bid practice.

This policy is a drag on the defense preparations. For example, Branch Motor Express Company, operating out of New York City, in the past has enjoyed a large volume of traffic from clothing manufacturers. Some of

these manufacturers are now engaged in making uniforms for the Army.

Since the National Defense Advisory Commission has issued instructions that defense purchases be made on an f.o.b. factory basis, the War Department takes delivery at the plant or factory and makes transportation arrangements itself. Under the War Department's usual policy of shipping by rail, Branch Motor Express Company is deprived of the business of its customers who are engaged in defense work, and the manufacturers and the Army are deprived of fast, flexible and economical trucking service.

Recently, one particular shipment of uniform cloth stored at the Quartermaster Depot at Philadelphia had to be rushed to the New York garment center quickly. Officials at the Depot decided they had better ship by truck. After spending the best part of a day trying to get permission from Washington to route the freight by motor truck, the Branch Company delivered the goods at New York overnight. It has taken the railroads two or three days to make similar deliveries.

The Union Cap Company of St. Louis supplies caps to the Quartermaster Depot at Jeffersonville, Ind. The Killion Motor Express Company of Washington, Ind., can make delivery over night. It takes two or three days by rail. Nevertheless, the railroads get the freight.

The folly and injustice of this condition was recognized by Congress at this session, and the Transportation Act of 1940, signed recently by President Roosevelt, contains a provision which relieves the Government from requiring bids from regulated common carriers.

Removal of this barrier to full utilization of motor transport in the defense program has been called to the attention of the War Department and the Defense Commission by the American Trucking Associations. The ATA has urged that in the future defense shipments should be left to the discretion of War Department traffic representatives at the scene of operations.

If this procedure is followed, the Government will get the benefit of the transportation service best adapted to particular shipments, and the defense program will be speeded up materially.

Cured with AC!

Blistered INSULATORS



WHAT HAPPENED—

(An Ohio fleet operator's experience.) Nearly every vehicle in this fleet was experiencing poor plug performance after several thousand miles. In each case, inspection revealed the fact that the lower insulators were badly blistered. AC recommended slightly "cooler" AC Spark Plugs, and a regular schedule of cleaning and regapping. The changes completely eliminated the difficulties.

WHY AC'S SOLVED THE PROBLEM—

Blistered insulators always mean that the plugs have run too "hot," too long. It is easy to correct this situation with AC Spark Plugs because the AC Heat Range furnishes a plug type which *exactly matches* the temperature requirements of any engine. No other line of spark plugs gives equally complete coverage of engine heat conditions.

Thousands of vehicles are being operated,—trouble free,—today because AC plugs, built to the AC Heat Range and correctly selected, put an end to spark plug difficulties.

FOR BEST PERFORMANCE—USE AC



All You Need for COMPLETE PLUG SERVICE

AC CLEANER—Cleans faster and better; cleans and dusts in one operation; available with or without stand.

AC GAP GAUGE—Four gap sizes; special round gauge stock,—accurately measures concave gaps.

AC CLEANING COMPOUND—Crushed rock,—sharp, quick cleaning; packed in 5-lb. containers.

Order from Your AC Supplier

For More Than 31 Years THE QUALITY SPARK PLUG

Chevrolet, Diamond T, Federal, GMC, International, and White Trucks; Buick, Cadillac, Chevrolet, LaSalle, Nash, Oldsmobile, and Pontiac motor cars; Allis-Chalmers, J. I. Case, Cletrac, and International Harvester Tractors . . . these are some of the well-known trucks, cars, and tractors which use AC Quality Spark Plugs. Trust your spark plug requirements to the same brand of spark plugs which the leading, big-volume manufacturers select.

AC SPARK PLUG DIVISION • General Motors Corporation • FLINT, MICH.

DODGE FOR '41

(CONTINUED FROM PAGE 37)

leverage have been provided.

Seat and back cushions in all truck cabs are completely redesigned to provide greater durability and driver comfort. Improvements include double-cone coil springs, with helical cross tie lacings, heavier construction of cross braces in seat cushions, and thicker padding between springs and upholstery material. New, ex-

ceptionally durable upholstery material is 30 oz., rubber-coated sateen of two-tone brown, finished in Morocco grain. Interior trim is in brown to match. Diesel cabs are upholstered with brown leather.

Cab door latches of heat-treated steel are thicker and stronger to reduce wear and hold doors securely shut even when operating conditions subject cabs to severe strains.

Panel and canopy bodies have a new design bucket seat which is wider, with a higher steel back, heav-

ily padded and spring cushioned. This seat tilts and is adjustable forward and backward to provide maximum comfort.

Numerous improvements have been incorporated in panel bodies with particular attention being paid to thorough sealing against dust and water. Pickup and canopy bodies have improved tail-gate chain brackets, designed to increase rigidity of the bodies at this point.

Completely redesigned stake and platform bodies incorporate many important advancements designed to give greater durability. Stakes and stake pockets are improved in design to fit better and provide greater strength. Cross sills are deeper, skid rails, and corner braces heavier. Wear plates have been added between the stake and the front and rear cross sills.

A new auxiliary 6-volt generator has been provided as standard equipment on diesel trucks and furnishes ample current for lights, instruments and dual horns. The auxiliary generator is especially important when operation requires special lighting of trailer equipment, etc. A 24-volt primary generator and starting motor assures power for starting in any weather. The cooling system has been improved. A dome light is mounted above the rear window of the cab in diesel models. A tachometer is provided as standard equipment.

Every model is equipped with such features as hydraulic brakes, roller-bearing universal joints, rustproofed cabs and sheet metal and rigid channel-type front bumpers.

The new 1/2-ton models are offered on 116-in. wheelbase; 3/4-ton, on 120-in. wheelbase; 1-ton, on 120 and 133-in. wheelbase; 1 1/2-ton regular models, on 126 1/2, 135 5/16, 160 and 190-in. wheelbase; 1 1/2-ton cab-over-engine models, on 105, 129 and 159-in. wheelbase; 2-ton regular trucks, on 136, 148, 160, 178 and 220-in. wheelbase; 2-ton cab-over-engine models, on 105, 129 and 159-in. wheelbase; heavy-duty gas and diesel-powered trucks on 152, 170, 188 and 205-in. wheelbase.

Six different engines are used to power the 1941 line. There are 17 different rear axle gear ratios, 23 different frames, four clutches, six brake combinations, 10 basic spring combinations and eight rear axles.



WE "CROSS" LEATHER AND RUBBER TO MAKE THIS ECONOMICAL UPHOLSTERY— *Genuine* U. S. NAUGAHYDE*

Many improvements in nature are achieved by crossing strains. This is the story of a "cross" of two natural materials to give you a better one—at lower cost.

We crush LEATHER and blend it with RUBBER to make NAUGAHYDE upholstery.

Leather makes NAUGAHYDE

TOUGH. Rubber makes it lastingly FLEXIBLE, for more years of crack-free wear!

Our exclusive TEMPERING process makes NAUGAHYDE luxuriously soft to the touch, yet amazingly resistant to abrasion. See for yourself—we'll send you test samples, in the latest colors. Write

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UNITED STATES RUBBER COMPANY

Coated Fabrics Division • MISHAWAKA, INDIANA



When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

E-Z ROUTE MILK TRUCK

All steel, easy to clean. Low cross aisle. Carries 42 cases. On Ford 122" chassis reduced to 112" wheelbase. Ideal with new Ford 4-cylinder engine.

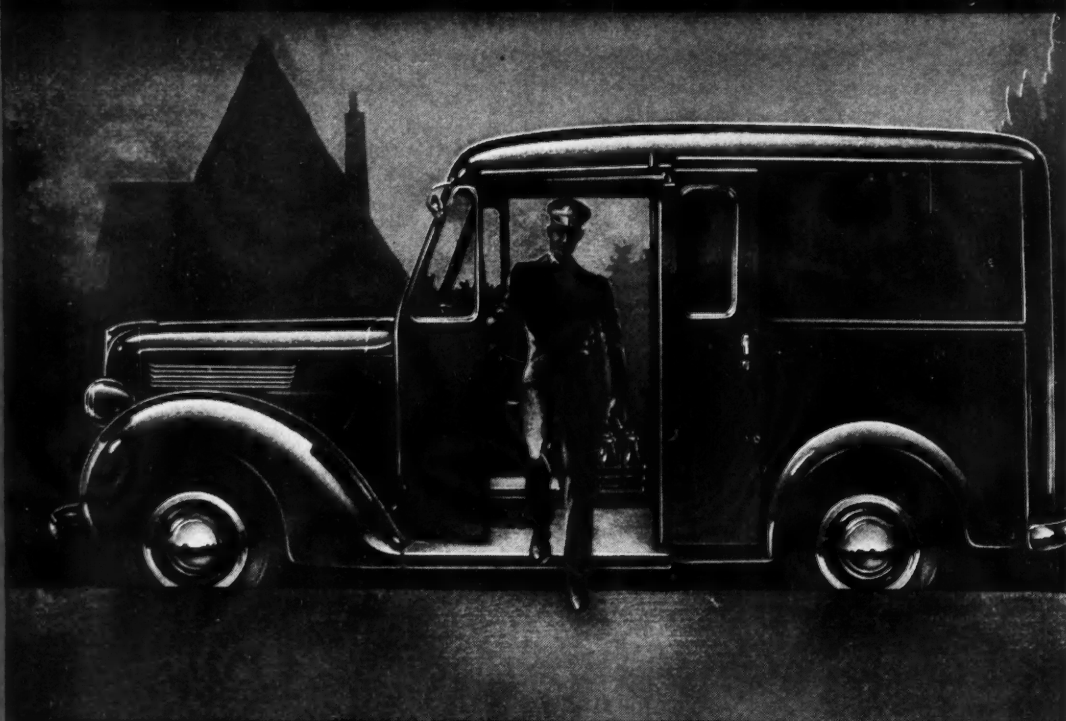
BAKER'S UNIT

Same as E-Z Route Milk Truck, but slightly increased load space. Exactly right for driver speed and efficiency.

SALESMAN'S SPECIAL

For fast delivery where loads not sufficiently bulky for VanEtte capacity. Design generally similar to other E-Z Routes, except on Ford 112" Commercial chassis.

Brooks E - Z ROUTE



More Stops per Route-Hour!

E-Z Route Speeds Up Route-Coverage with Design-Features that Cut Down Driver Time—Increase Driver Sales!

● Make your driver-salesman's job easier and he'll make more money for you!

E-Z Route Units were designed for driver efficiency. This design was the result of thorough study of drivers' needs and desires.

It pays to give your drivers E-Z Route's working advantages. These include: low, wide cross aisle; soft swiveling seat for driving-safety as well as

comfort; quick-operating doors; "office-on-wheels" conveniences; flexible handling; brilliant engine-performance.

Three E-Z Route models (see above) are proving themselves time-and-money savers. . . . So see your Ford dealer now to learn how E-Z Route can lower your delivery cost. Or mail the coupon below.

● Important to operators of Brooks' units is the country-wide Ford service facilities. Everywhere you get the same efficient, low-cost service that saves you Time and Money. To Brooks operators, this means less time in the garage, more time on the road.

**TRANSPORTATION
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TRANSPORTATION ENGINEERS, INC.

14307 Third Ave., Dept. 1 • Detroit, Michigan

Please send me literature on your Brooks Bodies.

Name _____

Type of Business _____

Street _____

City _____ State _____

FUEL FOR THE FUTURE

(CONTINUED FROM PAGE 27)

Since 1917 the number of petroleum refineries in the United States has been doubled and their productive capacity multiplied by four. Stocks of essential products are two to 10 times larger than those of 1917, storage capacities far greater. Land transportation facilities have been

doubled, marine facilities increased 800 per cent. There are six times as many local storage plants and 16 times as many roadside outlets.

The nation's military establishment would need chiefly fuels and lubricants. The industry's production of lubricating oil is nearly twice that of 1917, and growing. The average yield of gasoline from a barrel of crude oil has been doubled, thereby doubling the life of crude reserves. Production of finished gasoline is seven times as

great, and production of natural gasoline 10 times as great, with no comparison possible for the entirely new production of aviation gasoline in millions of gallons by processes undeveloped two decades ago. In fact, productive capacity for some of these fuels already is 10 times the consuming capacity of this country's present air fleet, both military and commercial.

The enormous growth and expansion of motor transportation in the United States has been met by similar development in the petroleum industry. The widespread use of automotive equipment has brought about a tremendous extension of the industry's system of distribution, so that every large consuming area now is adequately served by one or more of the several mediums of transportation utilized by the industry. The establishment of local storage plants in every sizable community and the installation of gasoline pumps and tanks in every nook and corner of the country have meant much in the way of convenience to the American people and may possibly mean more in the way of extremely rapid distribution in case of war.

It is my considered judgment that the government—and by the government I mean the executive (including the administrative and defense planning agencies) and the legislative branches of the federal government—and the American public, need not do any worrying over the possibility of a failure of having adequate natural crude oil production to meet all the national, industrial and civilian requirements in time of peace or war or for many years to come. Nor should they be concerned about the industry's ability to augment the supply of well-oil through the prompt production of substitutes from coal and oil shale whenever in time of peace or war it is economically desirable or otherwise necessary to do so. Neither do I think the time will ever come when the consumer will find dislocation of his supply, nor that the price will be exorbitant.

Magnus Folder on Cement Cleaner

The Magnus Chemical Co., Inc., Garwood, N. J., has a new descriptive folder on its product, Magnus Cement Cleaner. The cleaner is a concentrated powder from which a liquid floor cleaner is made, said to remove dirt and grease and also to whiten the cement. Folder may be obtained free by writing the manufacturer.

Handy Governors Will CUT Your OPERATING EXPENSE



When you restrict the maximum speed of your truck engines to a specific number of revolutions per minute by means of a Handy Governor, you find you will save money on GAS, OIL, TIRES and BRAKES.

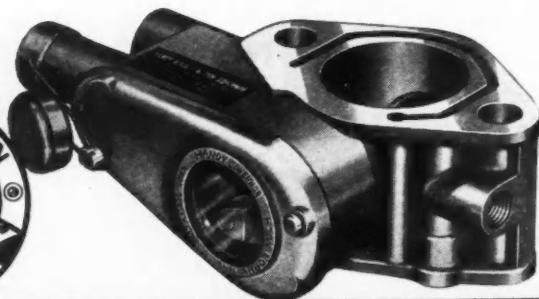
In addition to that, you will have to buy fewer engine replacement parts, your trucks will spend less time in the repair shop and will last longer in normal service.

Because excessive speed is an important contributory cause of accidents, Handy Governor control will reduce your accident rate and thus make another worth while saving.

When you total all these savings, you can't help but conclude that Handy Governors are just good business.

KING-SEELEY CORPORATION

Ann Arbor, Michigan



HANDY *Visible Action* GOVERNOR

WORLD'S LARGEST MANUFACTURERS OF AUTOMOTIVE GOVERNORS



PUT YOUR FOOT DOWN ON FILTER REFILL COSTS

... and, you'll do it with amazing success when you put WIX to work in YOUR oil filters. First, the bedrock cost of these new-day Refills would delight a penny wise Scotsman, but when you see how they perform in stepping up motor oil life, you'll realize at once why maintenance men in America's big time fleets give WIX the nod today!

Take one in your hand ... note its firm, resilient construction ... no shrinkage, matting or channeling with this rugged, sludge-thirsty baby on the lube line. Top quality cotton waste PLUS a specially selected, imported fibre give WIX the guts of an elephant, and a filtering efficiency you just can't match in the field today.

You can prove this peak performance at WIX's low cost, right on your own vehicles without a single penny of expense. Read the FREE offer to the right, send the handy coupon back to us now, and you'll get your foot down with a snap on needless filter refill expense.



FREE
Merely jot down the make and model number of any filter on any vehicle in your shop. We'll send you prepaid, WITHOUT ANY OBLIGATION OR EXPENSE, the proper FILTEREFIL for your job. We'll let its performance decide your future use of filter cartridges.

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Gastonia, N. C.

Gentlemen: You must have something to make this FREE TRIAL OFFER stand up, so send me a FILTEREFIL for FILTER MODEL NO.

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HIGHWAYS AND NATIONAL DEFENSE

(CONTINUED FROM PAGE 21)

ized columns through the low countries and northern France. The greatest story of all, however, remains to be told—that of the service of supply.

In September, 1914, Germany lost the war largely because its assault columns on the great right flank out-distanced their communications and

source of supply. Rapid as that movement then appeared, it was but at a snail's pace compared with the operations of May, 1940.

A great tank cannot possibly carry fuel for more than one day. But German tank divisions continued to move forward day after day and week after week. This alone meant a constant stream of gasoline trucks moving up from the rear to the ever-increasingly distant line of combat.

It has been stated that Poland, because of poor roads and the very

small number of motor vehicles in the country, was obliged to depend extensively on railroad service for mobilization. In the opening hours of the attack, key points, terminals and short stretches of rail were destroyed. Thus within a few days the German mechanized columns, advancing over diverging highways to the frontier, had subjugated practically the entire country.

Without the motor truck there could have been no blitzkrieg. Tanks, bombers and mechanized elements broke the resistance and paved the way. Ground thus captured was immediately occupied by infantry and material moved up by trucks, following closely in the wake of the motorized spearhead. This does not necessarily mean that horse-drawn equipment is no longer important. Much of the German field artillery of today is horse-drawn, but this was brought into the conflict with the consolidating of their positions after the mechanized forces had broken through. Hitler used his railroads whenever and wherever possible but he never depended upon them in the zone of operations without having alternative highway transport readily available.

The following special wireless report from Berlin appeared in the *New York Times* of May 23:

"Motor trucks able to follow immediately on the heels of the advancing troops are the chief means of transportation for supplies from the Reich to the foremost vanguard of the German armies. While the troops carried six days' rations with them when the offensive began, long columns of trucks were formed at the border behind the first divisions that marched into the Low Countries. Since then they have been keeping close behind the soldiers, negotiating ever longer distances to the rear.

"The Germans have relied chiefly on trucks because they anticipated widespread destruction of railways in the invaded territories. And while engineers are hard at work repairing bridges, roadbeds and rails for supply trains, trucks still must remain the principal transport vehicle.

"The pace set by the army must also be held by the supplies, otherwise the advance would be forced to slow down for lack of food, ammunition and gasoline. * * *

"Each German division has 1,700 men out of an estimated total of 20,000 to take care of the supply system. The bulk of the supplies are brought to divisional headquarters (TURN TO PAGE 90, PLEASE)

Don't worry about icy hills
Install **LINTERN SANDERS** *Now!*



**THESE SANDERS PUT
TEETH IN YOUR TIRES**

IN ALL WEATHERS

you can—

- | | |
|-----------------------|---|
| 1—Cut operating costs | 5—Reduce tire wear |
| 2—Maintain schedules | 6—Stop slipping, sliding, spinning wheels. |
| 3—Prevent accidents | 7—Have traction on tap with <u>finger tip control</u> |
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Reflecting more than 30 years' experience in building traction sanders.

Ask for folder "Traction" giving full details. The Lintern Corp., 7960 Lorain Ave., Cleveland, Ohio.

★ *Opportunity for Representatives: A few good territories still available. Write for full particulars.*

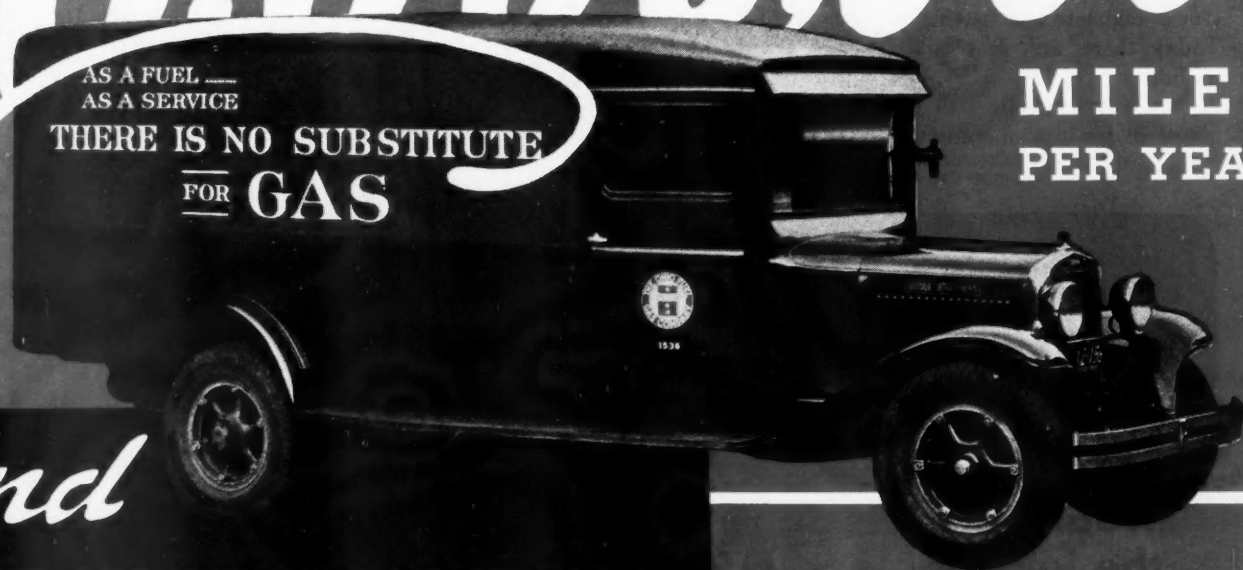
Install **LINTERN SANDERS** *Now!*

OHIO FUEL COMPANY TRUCKS TRAVEL

10,000,000

AS A FUEL
AS A SERVICE
THERE IS NO SUBSTITUTE
FOR GAS

MILES
PER YEAR



...and

ACCEPT NO SUBSTITUTE FOR
**BRAKE LINING
PERFORMANCE!**

The Ohio Fuel Company's selection of Thermoid Brake Linings for a wide variety of trucks and cars was based strictly on Thermoid's performance in tests on their fleet. This adds another significant chapter to the growing volume of evidence that Thermoid is the choice of the nation's leading fleets.

We could fill pages with facts about the

raw materials, the engineering, the production methods which are responsible for Thermoid's superiority... but in the final analysis, it is the testimony of performance that really counts... and it is on that score that Thermoid's position of leadership in heavy duty braking materials has been established.

Thermoid offers the *right* type of Brake Lining for each braking job. Regardless of the type or variety of units in your fleet, you can be certain of securing the Thermoid Brake Lining specifically designed for each individual job. We invite you to give Thermoid Brake Linings a performance test on your own equipment.

Thermoid

CUSTOM-BUILT BRAKE LINING SETS • CBB SETS
THERMO-BLOCKS FOR HEAVIEST DUTY

★ THERMOID COMPANY ★ *Trenton, New Jersey* ★

(CONTINUED FROM PAGE 88)

ters, where they are divided and issued to the regiments, which in turn supply battalions, companies and detachments."

America Motorized

When Pershing moved into Mexico, there was a total of 215,000 motor trucks registered in the United States. Today there are four and a half million.

Probably 550,000 of these are engaged in for-hire operations; 1,000,-

000 on farms and nearly 3,000,000 in private commercial and industrial operations.

These trucks, like all other motor vehicles, are widely distributed throughout the entire United States. A complete census of these vehicles in the hands of the military authorities would provide invaluable information as to the immediate location of units to be used under any emergency.

America has nearly 200,000 motor buses, including private and school

buses. When it is recognized that a large part of Norway was captured by German troops transported by buses, and that this means of transport played an important part in the movement of infantry by both sides in the low lands, the existence and availability of buses should not be forgotten.

There are at least 100,000 taxicabs in the United States. This fact recalls the effective use of the Paris taxicab army at the most crucial moment in 1914.

Early in the fall of 1939, representatives of the American Trucking Associations, Inc., and the National Association of Motor Bus Operators offered their full cooperation to the War Department. They made the suggestion that a complete census of all buses and trucks be made, including the name and address of each owner, with the type, age and capacity of each of his vehicles. Both of these national associations still stand ready to assist in the accumulation of this data. Experiments show, however, that operating alone they are unable to carry this through effectively unless the questionnaires are based upon an official request or order. Should the time come when these privately owned vehicles must be commandeered, many hardships to individuals will result unless such demands are rationally distributed. This can only be done if full information as to ownership, use and location is available. Hasty and arbitrary taking over of vehicles would needlessly interrupt and disturb normal and essential non-military traffic.

The private family car is the most completely and fairly distributed element of reserve transportation available for emergency use. Except in a few isolated sections, there are enough of these 25,000,000 vehicles locally owned to evacuate the entire civil population of any threatened area.

They are immediately available for the distribution of food, milk, medical supplies and other necessities. Their mobility is such that they can be but momentarily delayed.

They may be used for civil policing. During the 1940 army maneuvers, representatives of the Automotive Safety Foundation, the American Automobile Association, the National Safety Council, the International (TURN TO PAGE 92, PLEASE)

ZENITH GOV·U·RETOR

because it
"streamlined"
the jobs of
carburetion
and
governing

...we
"streamlined"
its
name

Combining carburetor and governor in a single, engineered mixture and speed control element.



ZENITH did a complete engineering job and combined the functions of a reliable speed control with thoroughly efficient carburetion. The result is the Zenith GOV-U-RETOR in one unit, with one throttle.

It provides a more efficient flow of fuel—minimum disturbance of

manifold distribution—fewer parts—simpler service—less surging—smooth governing action on levels or grades—better all around operating economy and satisfaction.

The Zenith GOV-U-RETOR is cutting costs in many fleets. Down-draft and up-draft types to fit most popular engines. Write—

ZENITH CARBURETOR DIVISION
BENDIX AVIATION CORPORATION
696 HART AVENUE DETROIT, MICHIGAN

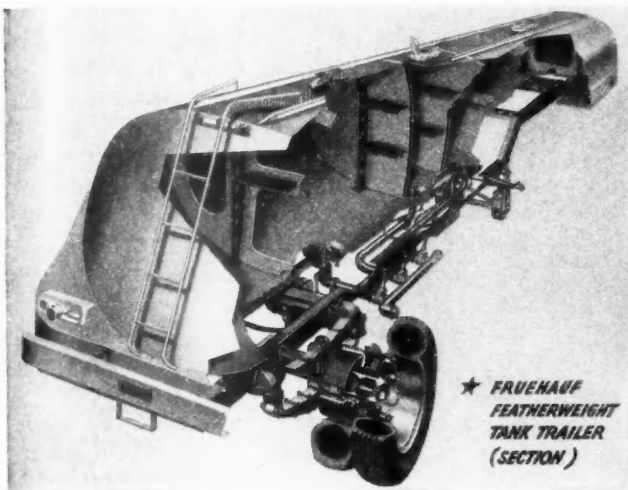
On Fruehauf Trailers . . .

only

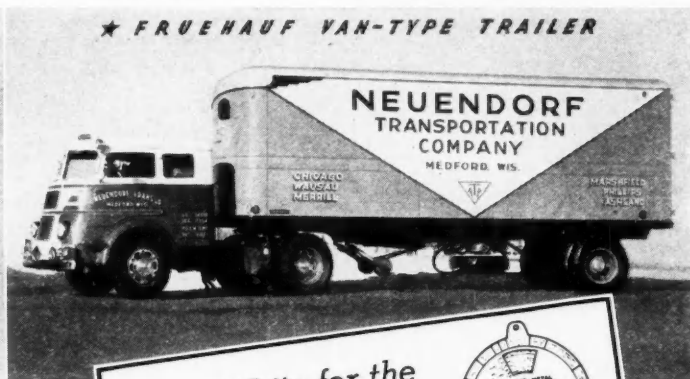
MEEHANITE BRAKE DRUMS



PHOTOS COURTESY FRUEHAUF TRAILER CO.
DETROIT, MICHIGAN

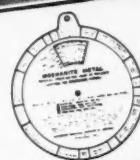


★ FRUEHAUF
FEATHERWEIGHT
TANK TRAILER
(SECTION)



★ FRUEHAUF VAN-TYPE TRAILER

Write for the
new Meehanite
specification wheel



Fruehauf Trailers—both Tank and Van types—are built to "take it." Steady, grueling service,—mile after mile,—day in and day out. That's what is demanded of them and that's what they give.

Meehanite brake drums contribute their part to steady service with safety. Here's how:

1. They maintain their shape under the heat of braking.
2. They provide an ideal braking surface (because of the metal's structure).
3. They minimize lining wear.
4. They are designed for strength and greater cooling surface.

YOUR FLEET OR YOUR TRUCK COULD BE MADE BETTER WITH MEEHANITE BRAKE DRUMS

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MEEHANITE RESEARCH INSTITUTE

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There is a Meehanite Foundry near you!

Ansonia, Conn. Farrel-Birmingham Co., Inc.
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St. Louis, Mo. Banner Iron Works
St. Paul, Minn. Valley Iron Works
London, Eng. The International Meehanite Metal Co., Ltd.

(CONTINUED FROM PAGE 90)

Association of Chiefs of Police and other national groups, made field studies upon which to develop plans for the orderly handling of traffic when highways become glutted with military and procurement vehicles. Alternative routes must be provided over which vehicular traffic may be so directed as to cause a minimum of interruption and confusion. It is a problem now receiving serious consideration, not only by these groups, but by civil and military authorities.

There are more than 40,000,000 motor vehicle operators in the United States, a majority of whom can handle, or quickly be taught to handle, any type of motorized equipment. Every farm boy accustomed to tractor operations is a potential driver of a tank or a combat car.

Financial Contributions

The greatest single element in any scheme for the defense of America is, naturally, our isolated geographical location, surrounded as we are

by salt water on three sides. Next in importance is the splendid integrated system of motor roads.

Within the past two decades, motor vehicle owners have contributed increasing sums in the form of registration fees and motor fuel and gasoline taxes. From this source alone approximately \$14,000,000,000 has gone into the construction and maintenance of highways. Should the day ever come when this country is attacked, practically every mile of that system is immediately susceptible of becoming an important military road.

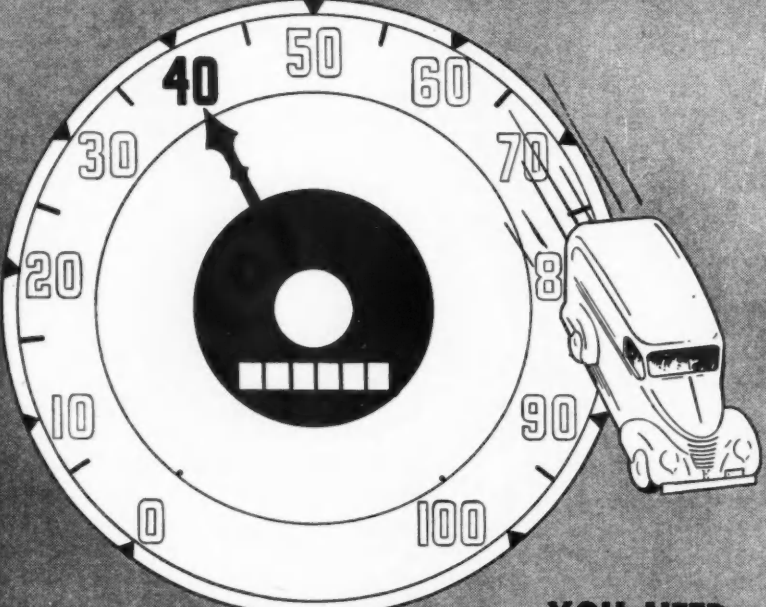
In the years 1917 to 1930, these same motorists contributed \$1,141,000,000 in excises, commonly called "war taxes." While these were repealed in 1928, they were resumed to meet the economic emergency in 1932, and during the past eight years they have aggregated an additional \$2,000,000,000. In 1939, these special excise taxes, totaling \$318,000,000, were contributed to the national government by the motorist, a contribution for which there is no comparison in the taxes paid by any or all other forms of transportation.

When the present needs for national defense were understood, the very first class upon whom added burdens of taxation were imposed was again the motorist. His special emergency tax on motor fuel was increased 50 per cent. This increase has been accepted and is being paid without murmur. While it was under consideration by Congress, representatives of the petroleum industry, always opposed in principle to a Federal excise tax on gasoline, accurately expressed the views of the motoring public in the following language: "We are not here to make any statement in opposition On the contrary, we recognize that the Federal taxes must be promptly and substantially increased. We believe that the American people understand the necessity for military preparedness and are ready to meet the tax obligations which such a program will necessarily impose."

In addition to all these special taxes for highway construction and maintenance, and for national defense, all of which will approximate \$1,400,000,000 this year, there is also being paid in direct taxes on the motor vehicle and motor vehicle operations, over a half billion dollars

(TURN TO PAGE 94, PLEASE)

WHEN YOU'RE GOING 58 FEET PER SECOND . . .



YOU NEED . . .

FERODO
BRAKE LININGS

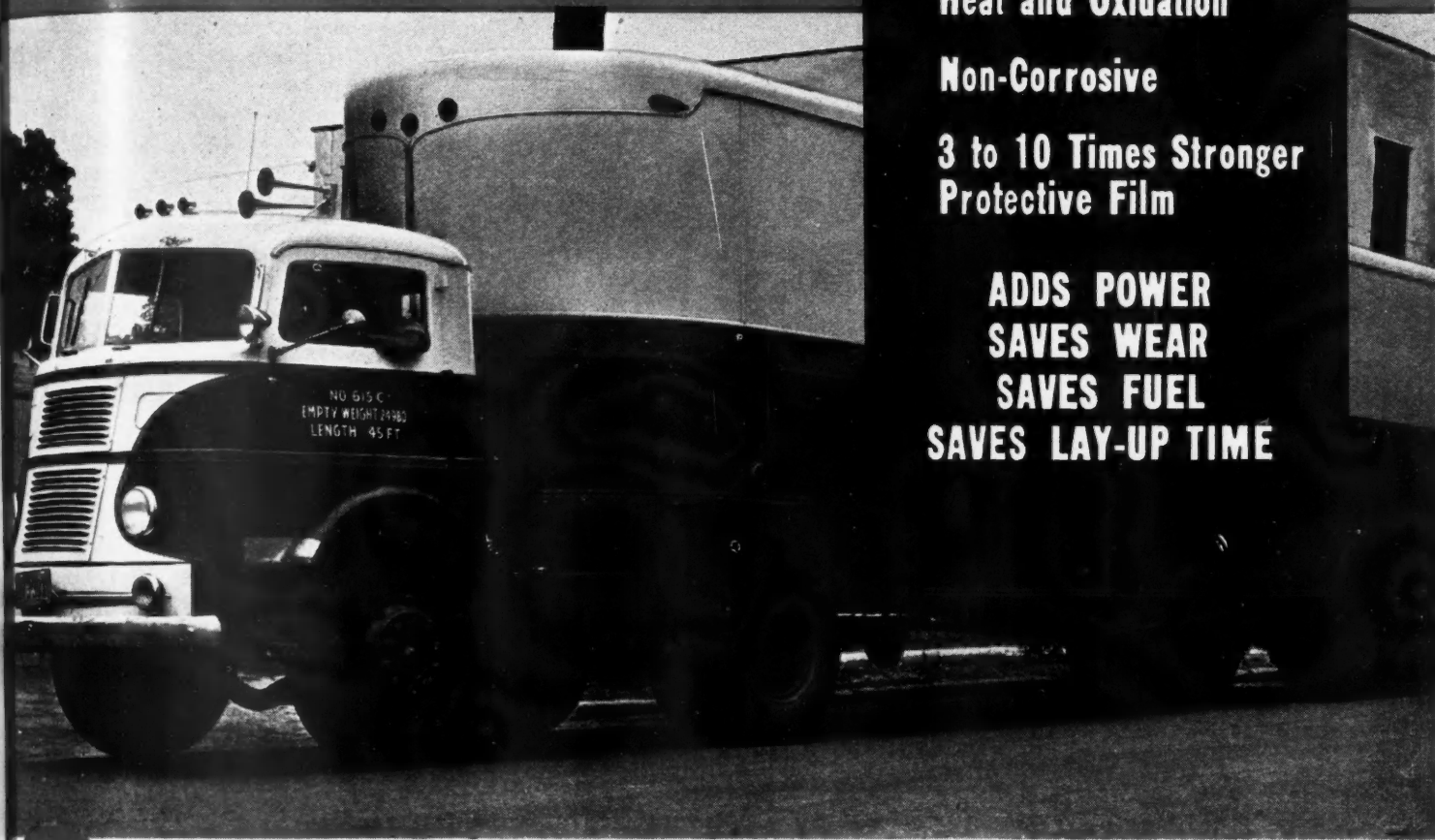
Even the most skilful driver needs a fraction of a second to get his foot on the brake pedal . . . meanwhile a truck may travel many feet, eating up the margin of safety. Then the brakes must take effect with no "ifs."

That is why modern trucks and today's driving conditions call for the most effective braking materials available.

Supplied $\frac{3}{4}$ " and up in thickness, Ferodo Brake Blocks are molded of a special friction compound under tremendous hydraulic pressure. They will not fade, even at extreme temperatures caused by terrific, prolonged braking. Their long effective life keeps down brake maintenance costs. They bring you safety at a saving. Write for full details.

• **FERODO AND ASBESTOS, INCORPORATED, NEW BRUNSWICK, N. J.**

KEEPS ENGINES CLEANER— LUBRICATES BETTER



BASICALLY DIFFERENT LUBRICATING OIL

Removes Hard Carbon

Higher Resistance to
Heat and Oxidation

Non-Corrosive

3 to 10 Times Stronger
Protective Film

**ADDS POWER
SAVES WEAR
SAVES FUEL
SAVES LAY-UP TIME**

LION *Naturalube* MOTOR OIL and DIESEL & HEAVY DUTY OIL*

That Lion Naturalube is setting the pace in economical fleet operation is a fact well proved by the service records of hundreds of cars and trucks of every size and type.

"A considerable saving in fuel" . . . "Conserves power by keeping engines cleaner" . . . "Steps-up horsepower" . . . "Fewer lay-ups for overhauls" . . . "Less cylinder and bearing wear" . . . these are typical of enthusiastic comments by fleet operators.

All this is readily understood when you consider Naturalube's two outstanding properties. First, Naturalube's solvent and penetrative properties gradually remove hard carbon from pistons, rings

and valves — thus power is conserved and fuel is saved. Next, Naturalube's three to ten times stronger film safeguards the engine under heavy loads and extreme temperatures — saving wear and repairs.

There's a proper grade of Naturalube for every trucking need — from a light one-ton truck to a forty-five tonner.

** Naturalube Diesel and Heavy Duty Oil is specially fortified or reinforced to resist the effects of intensified heat and oxidation under extreme conditions. Engines constantly operated at high speeds and/or heavy loads need this super lubricant.*

For visible proof of Naturalube's money-saving properties and details of money-back guarantee phone the nearest Lion Naturalube dealer or write Lion Oil Refining Company, El Dorado, Arkansas.



**Made By LION OIL REFINING CO.,
El Dorado, Ark.**

(CONTINUED FROM PAGE 92)
a year that goes to the general support of the various governments.

Defense Highways

We have no military roads, as such, in the United States. For a number of years, our War Department has worked in close collaboration with the Public Roads Administration, and those roads having special military or strategic value have been indicated on the War Department Special Highway Map. These are divided into

first, second and third priorities. This so-called strategic system is composed of approximately 75,000 miles of highways already in existence.

While a major part of this system is adequate for emergency traffic, there are, of course, many miles needing rebuilding, widening and strengthening. Except for some 3000 miles of "access roads," no new highways need be constructed.

Lt. Col. Paul E. Tombaugh, speaking for Gen. George V. Strong, Chief of the War Plans Division, outlined

the highway needs in an address before the American Association of State Highway Officials. He said, in part: "... that the highways which must be constructed for commerce and national development will, in general, be identical with those required by military purposes;

"... that a general network of good roads connecting important depots, mobilization and industrial centers, has more strategic value than transcontinental roads which merely cross the country from coast to coast or from north to south."

In addition to the strategic network of existing roads, some short stretches of new roads must be constructed to newly located industrial plants, and stretches of existing roads will have to be rebuilt or improved to serve plants now converted to defense procurement activities.

Special access roads must be built connecting mobilization cantonments with the existing highway system. The Federal Works Administrator has announced that these comparatively short stretches of road will total 3112 miles, nearly half of which will be within the military reservations themselves. These access roads may cost \$200,000,000.

The cost of improving the roads and bridges of the strategic system is now the subject of an engineering survey being conducted by the Public Roads Administration with the assistance of the state highway departments. The results of this survey should be reported in the near future. Preliminary glimpses at the data thus far accumulated would seem to indicate that these improvements may exceed a billion dollars in cost.

Surprising as it may seem, in the light of recent publicity from other sources, the Federal Works Administrator announced that there are only some 1800 inadequate bridges on the entire strategic system.

Repeated references have been made to the express highways in Germany, and comparisons unfavorable to our American highways have been frequently made. In fact, quite an inaccurate picture has been developed. The German engineers who constructed these 3500 miles of the Autobahn system learned road building in this country. While our proportion of dual highways is lower, we have over 11,000 miles of high (TURN TO PAGE 96, PLEASE)

A
Swiveling, Tilting
SEAT PEDESTAL
for Quicker and Easier Delivery Service



The new Eberhard "Pedaloc" driver's seat pedestal has unique features that meet the needs of small delivery truck service. When a stop is made the swivel seat is instantly released by pressure on the convenient pedal. After the driver slides out from behind the wheel, he can tilt the entire seat forward, thus giving maximum clearance through the side doors for cases, boxes or baskets.

The "Pedaloc" seat pedestal is simple and sturdy in construction. In the upper picture herewith the locking key has been raised by the pedal to permit the seat spider to swivel from the driving position. When the spider returns to the driving position the spring-operated key automatically locks it rigidly.

For greatest convenience and speed in operation of your small delivery trucks, don't fail to consider the new "Pedaloc" seat pedestal, No. 575717.

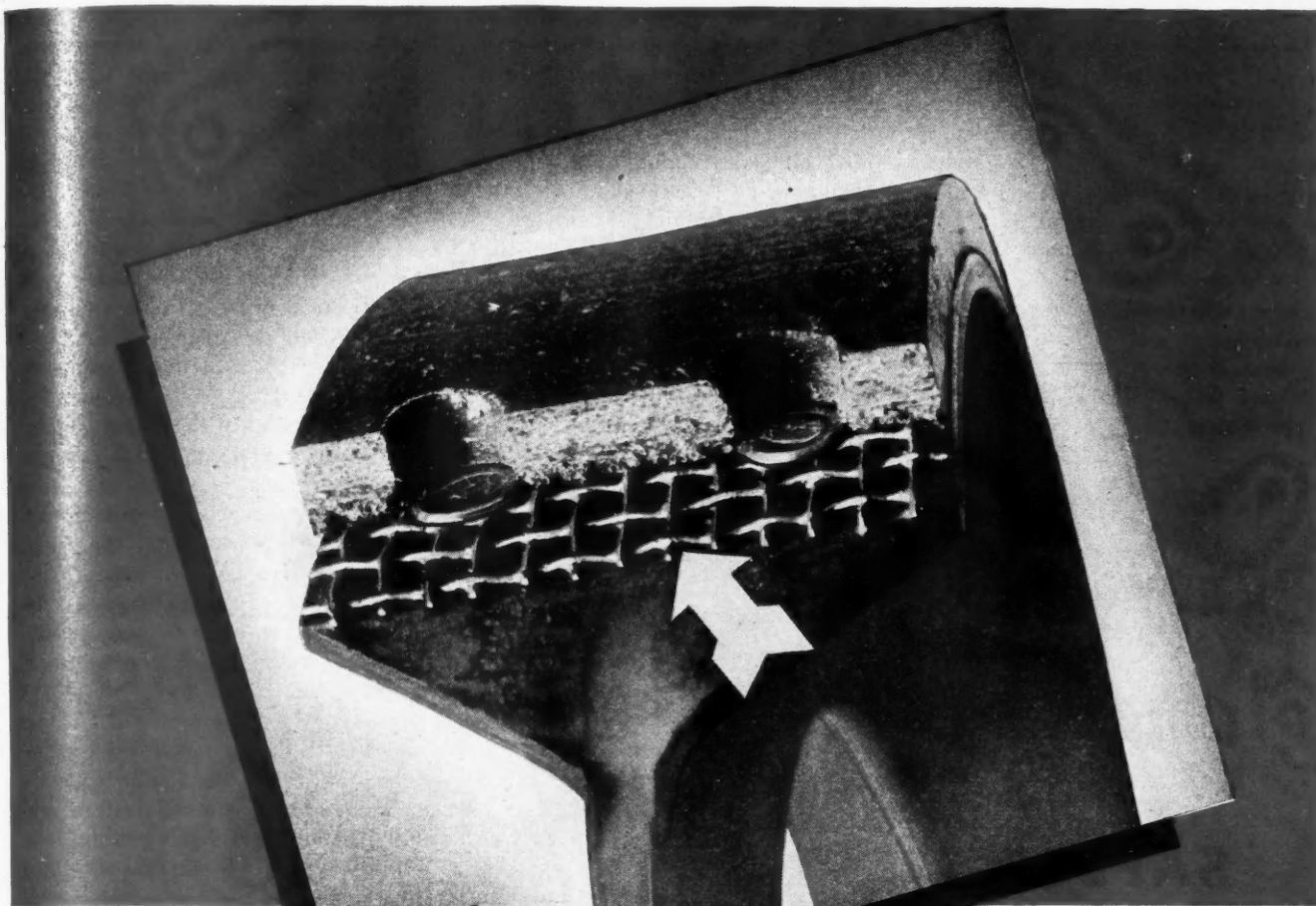
See your dealer or write direct to
Eberhard Manufacturing Co.
Division of
EASTERN MALLEABLE IRON CO.
CLEVELAND, OHIO

FOOT TRIP RELEASES SEAT TO SWIVEL

SEAT CAN BE TILTED FORWARD

EBERHARD
AUTOMOTIVE HARDWARE
Consult the LATEST
EBERHARD CATALOG





● THE WIRE-MESH BACK
GIVES A GREATER THICKNESS
OF USABLE LINING AND
FIRMER ANCHORAGE TO
THE SHOE.

**American
Brakeblok**
REG. U. S. PAT. OFF.
BRAKE LINING
**AMERICAN
BRAKEBLOK**

● Long wear and freedom from the necessity for frequent adjustment are generally recognized by fleet operators as advantages of American Brakeblok Brake Lining. The patented formula and the strong wire-mesh back combine to produce these characteristics which are of such importance to fleets in holding down brake maintenance costs.

American Brakeblok Brake Lining is made in all forms—rolls, strips and thick blocks—and in a complete range of formulas to meet the particular service requirements of different types of brakes.

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AMERICAN BRAKEBLOK DIVISION OF THE AMERICAN BRAKE SHOE & FOUNDRY COMPANY • DETROIT

(CONTINUED FROM PAGE 94)

type paved roads exceeding two lanes in width. There are more than 200,000 miles of rural roads constructed with high type paving of two lanes or more, a condition that cannot be proportionately approached by the German highway program.

A transcontinental system of super-highways might be enjoyed by all of us as a luxury. But it is not a military necessity, and its cost would be far beyond the ability of the overburdened taxpayer to bear.

The Public Roads Administration

and the state highway departments have been engaged in state-wide highway planning surveys for the past three years. From the results of these surveys, a broad and rational plan for construction and improvement is being developed, under which the taxpayers' money will be expended where it will serve to meet the greatest need. Highway users as a group naturally favor every highway improvement needed for national defense, but they oppose use of the defense program as a springboard for grandiose superhighway schemes.

Every expenditure of highway improvement needed in the defense program should be made only upon the specific approval of the Public Roads Administration and the War or Navy Departments. Furthermore, highways built for strictly military purposes, that may not be needed for normal traffic, should be paid for out of general funds. The burden of maintenance for these new highways will in itself be a sufficient load for the highway user of the future.

Federal highway officials have asserted that most of the improvements needed on the strategic highway system are, in fact, ones that will inure to the convenience of normal traffic.

Abiding confidence in the judgment and foresight of our Public Roads Administration impels the writer to accept this thesis. A comparison, however, of the strategic highway map with the Federal aid highway system shows about 150,000 miles of the latter on which no "defense" improvements will be made.

The recently enacted Federal aid bill for the fiscal years ending June 30, 1942 and 1943 carried with it a provision that the Commissioner of Public Roads may give priority of approval to and expedite the construction of projects that are recommended by Federal defense agencies. Furthermore, it is assumed that the expenditure of unobligated funds of the 1940-41 monies is subject to the same treatment. This emphasis placed on defense will obviously curtail expenditures on other sections of the Federal aid system. It creates a situation fraught with danger to that larger part of the highway system not included on the strategic map. Let us hope this situation is temporary.

In the face of the inhuman tragedy being enacted overseas, America is in the throes of a gigantic, though belated, effort to build its defenses. We may be in time. In any event, we must not overlook nor disregard the lessons being written for us across the way. The nation that best conducts a war is the one that protects the homeland in such a way as to minimize interruptions to and dislocations of normal commerce and traffic within its borders. Highway transportation is anxious to play its full part. It asks only that it be permitted to serve without unnatural impediments or burdensome restrictions that would hamstring its effectiveness.

FROM NOW 'TIL APRIL—

RELY ON

Pyrene

Monthly and Flash
Weather Forecasts
PLUS
Good Tire Chains

SAFETY-SERVICE

This winter, Pyrene will not only provide tire chains for your fleets but weather forecasts that will tell you when you need them.

Pyrene jobbers everywhere will provide your chain needs from their complete stocks which include Standard, Extra Heavy, and

Doubleduty Bar-Reinforced in single and duals for all sizes.

Pyrene chains are good chains. Every cross chain case-hardened for long wear; every side chain perfectly welded. Rigid road tests, factory tests and inspections assure uniform quality.

Another Pyrene Safety "First"

Pyrene jobbers and dealers now get monthly and short range chain weather forecasts furnished by Dr. I. P. Krick of the Krick Industrial Weather Service and used by leading air lines, movie studios, and public utilities.

When you buy your tire chains insist on Pyrene and check from time to time wherever the Pyrene sign is displayed for authentic weather forecasts.

Use Pyrene Doubleduty chains with Bar-Reinforced links for double mileage at lower cost



Pyrene Manufacturing Company

NEWARK NEW JERSEY

ATLANTA
KANSAS CITY

CHICAGO
SAN FRANCISCO

COUNTY ROADS COST FOR 1939 NEAR \$200,000

**\$18,000 Deficit Attributed
To Unusual Spring Thaw
Conditions, Repairs**

**Balance For Snow Removal
Fund Reported At Start Of
Winter**

Maintenance of the county trunk highway system in 1939 cost \$196,806.41, the annual report of the highway commission revealed today.

The commission ended the year with an overdraft of \$18,989.89, however, as there was only \$177,816.52 available during the year. Receipts included the annual appropriation by the county board of \$86,400; \$4,410 from the towns which had highways in the prospective state trunk highway system and the \$89,104.90 from the state from gasoline tax and license funds.

Worst In Years

The deficit was attributed to unusual conditions last spring when the "breakup" came. The thaw left county trunk blacktop highways in unusually poor condition and the extra funds were needed for repair work. Commissioner [redacted] said that conditions were the most serious in many years.

The snow removal program for the 1938-39 season cost a total of \$30,920.13 and there was a balance of \$5,029.89 in that fund at the beginning of the winter, despite the fact that there had been a deficit of \$6,830.90 from the previous year. The board's appropriation for snow removal was \$40,000 and additional sums of \$1,489 and \$1,291.92 were received for the rent of plows on the county fence. Removal of snow and snow fence costs \$11,946.36, while varied items such as ice prevention, plow repairs, installation of snow fence, removing fence purchase costs totalled \$15,345.61. 11,650 feet of three new plows and 628.16 to the cost.

Projects Completed

Two county construction projects—rebuilding of 5.47 miles of County Trunk PFF east of Oak Grove, 1.68 miles of County Trunk PFF east of Oak Grove, the so-called [redacted]

HEAVY DAMAGE TO OUR ROADS

**Cold, Ice And Snow Cost
County Over \$50,000,
Reports**

January's ice and snow and sub-freezing temperatures caused damage estimated in excess of \$50,000 to Jefferson County's 163 miles of paved highways, Commissioner [redacted] announced today.

An Engineering Department survey places the material damage at more than \$30,000, and estimates labor costs on replacement and resurfacing work at approximately \$20,000.

Mr. [redacted] said there were two types of damage: Road "checking" or "line cracking," which can be sealed with hot tar applications in the fissures and "road bucking," or bulging, which will necessitate a tearing away of the old surface and replacing it with entirely new paving materials.

Mr. [redacted] said the damage to the paved roads was caused by water seeping under the pavement and freezing. Some of the bulged strips are a quarter of a mile long. Repair crews, the commissioner added, will not be able to go into action on the paved highways until fair weather. However, maintenance crews working even on rainy days, the unpaved roads, which have been scraped, filled in with [redacted]

TWO clippings—two of many in our files—a tiny part of the tremendous picture of road destruction—the annual toll that snow soaked roads take out of your budget.

What you could save in road repair cost annually with Snogo would pay its cost! Look at the job pictured here. Wet, soggy ice-laden stuff goes into the fields where it can do no damage. The shoulders will be clear and safe. There will be no heavy destructive flow of water on or under the road. The ditches will function normally. Temperatures will be uniform in road and shoulder, minimizing the chance of heaving, and spring repair will be cut to insignificance.

Here is real snow clearance that pays dividends—and no other type of equipment can do the job. But best of all it is not expensive—there is a size Snogo for every budget.

KLAUER MANUFACTURING COMPANY, Dubuque, Iowa

**A SNOGO FOR
EVERY BUDGET—
FROM 1½ TON
TO THE LARGEST
FOUR WHEEL
DRIVE TYPE OF
TRUCK!**

PRIVATE TRUCKS AND PREPAREDNESS

(CONTINUED FROM PAGE 23)

employed. Because the private truck, particularly, is so intimately linked with the production function in industry and agriculture, it would seem that "preparedness" so far as it is concerned, would mean — among other things—being prepared to employ its facilities most effectively in emergencies with as little dislocation

as possible of its present place in the "preparedness program."

The council recommends also that studies of local highway facilities be made by the Public Roads Administration or other qualified Federal bureau, in manufacturing and distributing zones where National Defense materials are to be produced in quantity, with the view toward recommending the highway developments in these various localities which are necessary to insure adequate facilities for speeding an efficient handling by

trucks of raw production materials and finished products for National Defense.

Equally as important as the private truck itself in National Defense are adequate highway facilities upon which to employ private trucks to best advantage, particularly within the production and distribution areas in which they are now located. An important link in a strategic system of national defense highways, even in preparing for National Defense, must be not only arterial highways of strategic military value but "feeder" highways and production area highways to facilitate the movement of defense production within such areas, and to provide adequate connections with arterial highways. It would seem that the value of the private truck in the defense program, since it is so closely linked to production, could be enhanced in anticipation of a national emergency if, preferably under Federal direction, the highway requirements within and those connecting production areas with arterial highways could be ascertained in advance and provided for specifically to meet such requirements.

The place of the private truck in preparedness and its value as an integral part of the National Defense program have to do particularly with the movement of property within relatively small areas of production importance. They provide particularly the fast, flexible transportation link within local raw material and production operations and between production and consumption — whether that consumption be peacetime or wartime in character. Private truck transportation in National Defense is more closely related to and an integral part of production than any other type of transportation.

Hence, private truck owners, being largely producers in the essential characteristics of their businesses, see the need for preservation, in National Defense, of the close liaison between the production and transportation activities to the end that the effectiveness of both shall be best employed.

Under the present organization setup of the National Advisory Defense Commission, transportation and production are among the major divisions of administrative responsibility. This is necessary, but since private trucks constitute a particular type of

(TURN TO PAGE 106, PLEASE)



Tough Specifications

MUST SEEK

PRECISION METHODS



UNQUESTIONED RELIABILITY



PRODUCTION CAPACITY

CONTINENTAL MOTORS

CORPORATION

MEETS THESE REQUIREMENTS

For these reasons Continental has not only been selected by the Government to do its important part in the program for United States defense — but the immediate reopening of the Detroit plant and accelerated facilities at Muskegon are assurances that Continental will continue to meet the toughest specifications of automotive and commercial requirements.



Continental Motors Corporation

MUSKEGON, MICHIGAN

PREPARE FOR DEFENSE BUSINESS WITH GAR WOOD EQUIPMENT

HOISTS AND BODIES

★ WINCHES AND CRANES

★ TRUCK TANKS

★ ROAD MACHINERY

★ AIR CONDITIONING

★ MOTOR BOATS

Complete Line of Hoists and Bodies for Light and Heavy Duty Hauling. Illustrated: Model D7 Hoist and Type C12 Body with Patented Trussed Under-Structure.

★ Diversified products offered by Gar Wood, pioneer manufacturer whose experience covers more than a quarter of a century, represent mechanized equipment urgently needed for defense business. More Contractors, Municipalities, Governmental Agencies, Truck Distributors and Individual Users are insisting on Gar Wood equipment because it is universally recognized as most dependable for today's requirements. The name Gar Wood is your assurance of unexcelled performance and more productive hours. Let Gar Wood engineers—who specialize in designing the type of equipment best suited for the work—assist you in planning your equipment needs for defense business.

Special Heavy Duty Rock Body, 25 cubic yards. Model T440 Dual Wall Twin Cylinder Telescopic Underbody Hoist.

Heavy Duty Trailer Train. Specially Designed for Quarry Work. Bodies Dumped to Either Side, Singly or Together by Model SD88X Hydraulic Hoists.

Truck Tanks—Refueling Units—Flushers—Sprinklers.

Truck Winches for Every Type of Service.

All-purpose Combination Unit. Winch, Crane, Hoist and Dump Body—All Mounted on One Truck.

2-and 4-wheel Earth-Moving Scrapers both cable and hydraulically operated that Dig, Load, Dump and Spread.

Hydraulically Operated Trail-builders and Bulldozers for Track-Type Tractors.

Rippers for Ripping Compacted Earth, Shale, Rock, Roots and Old Roads.

Tamping Rollers for Packing Fills.

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GAR WOOD INDUSTRIES, INC.

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Branches and Distributors Everywhere

World's Largest Manufacturer of Truck and Trailer Equipment

Cable Address: "WOODHOIST"

(CONTINUED FROM PAGE 104)
 transportation which is most intimately connected with and a part of production, the National Council of Private Motor Truck Owners, Inc., assumes that the essential importance of the private truck in the production program will be given the consideration it merits through the maintaining at all times of the closest kind of liaison between the production and transportation departments of the National Advisory Defense Commission.
 It is too early, as this article is be-

ing prepared, to comment specifically upon the uses to which private trucks will be put by those in charge of the National Defense program.

The extent and nature of employment of private trucks must depend, in any well-ordered defense program, upon the extent of, the nature, and the location of the emergency or emergencies encountered. Since 86 per cent of all commercial vehicles registered in the United States are privately owned and operated, it is obvious that their part in all phases

of national defense will be large.

"Blitzkrieg" warfare in Europe has left no doubt in the minds of the rest of the world as to the important role that the motor vehicle must assume in modern mechanized warfare—both behind the "lines" in meeting the requirements of a supply system for fast, mechanized, military units—and in the specialized fast mobile warfare units themselves.

"Preparedness," so far as the private truck is concerned, must anticipate the emergency employment of available commercial vehicles by defense forces, if emergencies should develop before our defense forces can be adequately equipped with Army vehicles.

The sacrifices which private truck operators may have to make—and which they will make willingly when called upon—will depend upon the seriousness and the location of emergencies in the event of an invasion of our shores by an enemy.

In the meantime, however, the private truck owner is "mobilized" in the ranks of defense production as an integral part of that activity, and his participation in the National Defense program will expand as defense production and other needs for private trucks expand. Meanwhile, the private truck continues to provide its normal functions in peacetime production and distribution.

The inherent value of the private truck as an intimate and integral part of production and distribution in industry and agriculture is, and will continue to be, a major contributor in the accomplishment of national "preparedness."

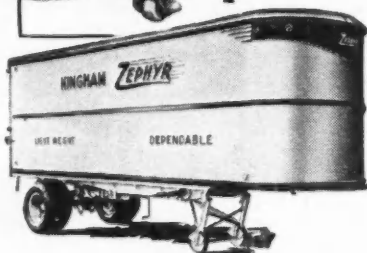
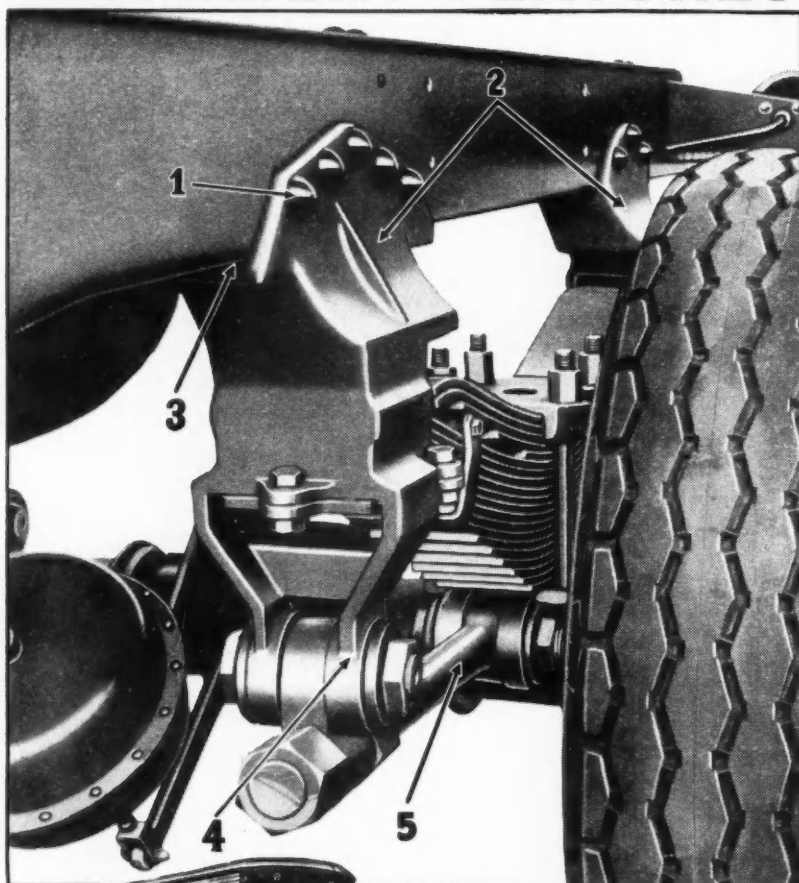
Hug Delivers 12 Trucks to TVA

The Hug Co., Highland, Ill., recently delivered a dozen model D99-S trucks like the one illustrated to the Tennessee Valley



Authority for work on the Cherokee Dam. Each is equipped with a Cummins HB600 diesel engine, Heil 12 cu. yd. Boulder Dam body, Heil dual-telescopic hoist and 12.00/20 tires.

NEW KINGHAM ZEPHYR ALIGNMENT FEATURES



The new Kingham Zephyr Body is made of die formed high tensile steel. All parts are interchangeable. Side and roof panels easily removed from outside.

CHECK EACH FEATURE

- 1 Seven oversize hot driven rivets fasten front hanger securely to frame. These rivets also go through and hold X-brace on inner side of frame reinforcing it at this vital point.
- 2 Electric steel spring castings fully enclosed.
- 3 Spring hangers mounted directly under main frame member.
- 4 Hanger serves as anchor for radius rod at front.
- 5 Drop forged, heat-treated radius rods, heavy duty swivel adjustable and rubber mounted. Proper axle alignment obtained under all load conditions. Adjustable radius rods are extremely important for maximum tire mileage; rubber mounting requires practically no service.

NATIONAL SALES

Kingham
UNIVERSAL

NATIONAL SERVICE

KINGHAM TRAILER CO.

INCORPORATED

LOUISVILLE, KENTUCKY

When writing to advertisers please mention Commercial Car Journal!

COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

A-H MATCHED SETS MAKE SICK ENGINES SAY



Here's a treatment for sluggish, run-down commercial engines that is becoming almost as famous as the proverbial fountain of youth. But the A-H Matched Set treatment does more than rejuvenate engines. It tones up profits, too!

First A-H Matched Sets pep up profits through savings in installation time. Each set contains exactly the right number of rings in exactly the right combination for the specific engine under treatment. The result is easier, less costly installations. The bus or truck rolls out on the road again in record time.

And once it's out on the road again... then savings will really begin to climb. You'll see them in decreased gas and oil consumption. You'll see them in better schedule maintenance. If you want proof, pick out the "sickest" unit in your fleet and treat it with the right A-H Matched Set. It'll go back on the road again with the constitution of an athlete and a canary bird's appetite for gas and oil.



**EACH SET IS INDIVIDUALLY MATCHED
FOR A SPECIFIC COMMERCIAL ENGINE**

American Hammered offers a RE-BORE SET-UP of Conventional Rings and a RE-RING SET-UP of Flexible Rings... all in matched sets for each particular engine... clearly identified... you may be assured easy, economical installation.

KOPPERS COMPANY

American Hammered Piston Ring Division
Baltimore, Maryland



**THE CHOICE OF THOSE TO WHOM
TRANSPORTATION IS A BUSINESS**



American Hammered Piston Rings

a K O P P E R S product

WAR IS HELL

(CONTINUED FROM PAGE 29)

such misunderstanding, let's look at the passenger car restrictions and see what England does with the gasoline that she has so carefully saved at the expense of the trucking business.

A passenger car owner may get from 4 to 10 gal. of fuel per month by simply presenting his registration card at his local post office or taxation office. The exact amount de-

pends upon the horsepower of his car. The passenger car owner does not have to account for the way he uses his car at all, and he can get a supplementary fuel allowance if he uses his car to get to and from work and there is no other method of transportation between these points or if existing methods of transportation are inconvenient.

Officers and men on leave are permitted 6 gal. of fuel for touring while on leave. Visiting tourists can get

gasoline and traveling salesmen may get up to 21 gal. of fuel per month to supplement their basic ration regardless of what they sell.

Some of the more hardy truck operators turned to producer gas units to avoid total destruction by this bureaucratic blitzkrieg, despite the long unhappy history of this form of motive power.

Everything that burns has been tried as fuel, including coal, wood, oil, tar and camel dung. The present crop of producer gas units are designed for burning anthracite coal since there is a plentiful supply of this in the British Isles even though it may not be distributed in the correct places.

Mechanically the apparatus consists of a cylindrical container, the upper part of which is a coal hopper and the lower part a fire box. The draft that keeps the fire burning is supplied by the engine vacuum, which means that the engine must be running before the fire can burn at a sufficient rate to provide enough flue gas to operate the engine. Thus it is always necessary to start the engine on gasoline and then switch it over to producer gas.

Since the gas supplied by the burning anthracite is entirely too hot, it is necessary to cool it with water, which makes it necessary to carry around about one-quarter as much water by weight as coal. And since the gas has a low calorific value, the power of an ordinary engine is cut by about 40 per cent. All of which adds up to the fact that the operator adds about 600 to 800 lb. of non-payload to his vehicle while he is cutting his power about 40 per cent.

There has been trouble with clinking but this seems to have been largely overcome. There was also terrific cylinder wear but this has been improved by development of filters and dust boxes. Even so it is still bad. There is, besides a loss of power, a time lag between stepping on the accelerator and increase in engine speed. Performance is dependent upon a number of adjustments that the driver must make from time to time, which seem a great deal more complicated than any adjustments we have been able to train drivers to make. A 10-minute stop requires a start on gasoline.

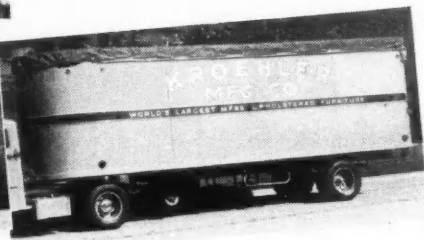
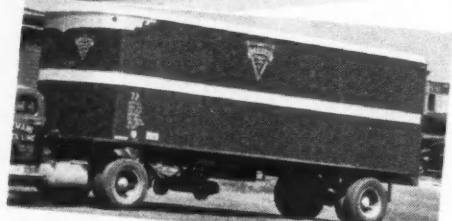
(TURN TO PAGE 112, PLEASE)

EDWARDS HI-TENSILE STEEL TRAILERS

**CUT DEADWEIGHT
WITHOUT DEPARTING
FROM TIME-PROVED
DESIGN...**

EDWARDS

lightweight trailers are serving the trucking industry with distinction. Saving high costs and adding to payload profits. Edwards hi-tensile steel construction is as light in weight as is practical. Built to time-tested principles of design and with no radical departures. Easy to repair at minimum cost and with minimum loss of time in case of damage.



EDWARDS HI-TENSILE STEEL SEMI-TRAILERS

EDWARDS IRON WORKS, SOUTH BEND, IND.

**A FEW GOOD TERRITORIES STILL OPEN FOR
QUALIFIED DEALERS. WRITE OR WIRE.**

N-A-X

High Tensile

This superior low alloy, high tensile, high ductile steel is regularly being used in the manufacture of many types of equipment for the defense program.

You need not take chances on having your designs rejected because the high tensile, low alloy steel doesn't meet specification for armament parts. Many long months before the armament program got under way Great Lakes engineers made sure that N-A-X HIGH TENSILE had all the physical properties necessary for this type of work. N-A-X HIGH TENSILE is regularly being used by manufacturers making a variety of parts for the defense program because N-A-X HIGH TENSILE has—

DUCTILITY—assuring long fatigue life and ease of fabrication.

STRENGTH

Typical Properties of $\frac{1}{16}$ -inch Thick Plate

Condition of Plate	Yield Point	Tensile Strength	% Elongation	R.A.
As Rolled.....	56,690 p.s.i.	83,000 p.s.i.	40%	
Stressed Relieved..... (six hours at 1115°F. Furnace cooled.)	55,410 p.s.i.	81,650 p.s.i.	44%	
Heat Treated.....	126,200 p.s.i.	135,150 p.s.i.	22.6%	54%

IMPACT RESISTANCE

+75°F	65 foot pounds (Charpy Keyhole)
-25°F	50 foot pounds (Charpy Keyhole)

EXCELLENT WELDABILITY—A steel with the combined properties of N-A-X HIGH TENSILE as given above and possessing the excellent weldability as this low alloy high tensile does, enables the fabricator to produce products that meet the very exacting specifications for defense equipment.

N-A-X HIGH TENSILE also enables the fabricator to turn out parts and products economically because this unusual low alloy steel goes through each phase of manufacture smoothly, easily, quickly.

Call on Great Lakes engineers to show you how you can use this really superior high tensile steel to advantage. One will be glad to call at your convenience—no obligation. Wire, write or telephone for one today. Great Lakes Steel Corporation, Detroit, Michigan.

GREAT LAKES STEEL CORPORATION—DETROIT, MICHIGAN

Boston, 460 Statler Office Building; Buffalo, 1000 Walbridge Building; Chattanooga, 18 Volunteer Building; Chicago, 1026 Builders Building; Cleveland, 820 Leader Building; Dayton, 1401 Third National Bank Building; Indianapolis, 1215-17 Circle Tower; Minneapolis, 714 Midland Bank Building; New York, 405 Lexington Avenue; Philadelphia, 407 Liberty Trust Building; St. Louis, 3615 Olive Street; San Francisco, 824 Sharon Building; Toledo, 906 Edison Building. Montreal, Quebec, Drummond, McCall & Co., Limited; Toronto, Ontario, Peckover's, Limited.

division of



NATIONAL STEEL CORPORATION

Executive Offices, Pittsburgh, Pa.

WAR IS HELL

(CONTINUED FROM PAGE 108)

Naturally there is no place for this bulky, heavy apparatus on most trucks. Consequently it must be carried on a two-wheel trailer which must be removed before the truck can back up to a platform. If the operator was too alert and got into the producer gas equipment too early he had to pay a special license fee for the trailer. The regulation has since been relaxed.

And what does the truck operator get for the pioneering and all the growing pains in connection with the producer gas unit? He gets the basic fuel allowance for any truck fitted with a producer gas unit cut in half. The whole deal must be as bad a bargain as it sounds because even with the severe gasoline restrictions there are only somewhere between 125 and 600 producer gas units in operation in England. The optimists say 600, and pessimists say 125, and add that many of those produced and fitted

can be had at the junk price. One cynical editor comments that if every agent appointed by producer gas equipment manufacturers sold one unit, there would be twice as many in use as there are now.

The city gas, like the producer gas, has a high octane rating but very little staying power. Producer gas units can go roughly 60 miles on 100 lb. of coal. This coal must be graded and processed to the point where there emerges about 180 lb. of suitable fuel per ton of anthracite. It costs about \$30 per ton. City gas, if used, must be kept in large roof-top bags since the shortage of steel precludes the use of steel cylinders. The ordinary vehicle cannot venture more than 10 miles from its source of supply because 20 miles is about all the mileage it can get from one filling.

If the truck operator can manage enough fuel of one kind or another to keep his trucks, or some of them, in operation, he has really let himself in for some jolly minutes of anxious waiting. When his trucks venture forth at night, the operator can well spend his time wondering if he still has trucks and drivers until each one of them checks in. Traffic conditions are that hazardous. When the blackouts became necessary the operators painted headlamp reflectors dark colors and placed two thicknesses of tissue paper over the lens of the lights. Tail lights and clearance lights got the same treatment.

Such makeshift arrangements were soon replaced by headlamp masks which fit over the headlamp. These usually have two covers some few inches apart. These metal covers have three 5/16-in. slots in them and through these slots filters some light that has found its way through a diffusing material. This is all the light the driver gets. One of the regulations for headlamps is that it should not provide more than 2.5 foot candles of light on a vertical wall 10 ft. from the headlamps. An average American headlamp in good condition will give about 250 foot candles at this distance.

When the operator get his vehicles all fitted out with headlamp masks and perhaps producer gas units, he may find that the government needs a truck worse than he does, in which

(TURN TO PAGE 114, PLEASE)

DUALTREAD LICKS THE HEAT!

Tough outer-tread compound increases resistance to wear

Exclusive under-tread compounds control heat

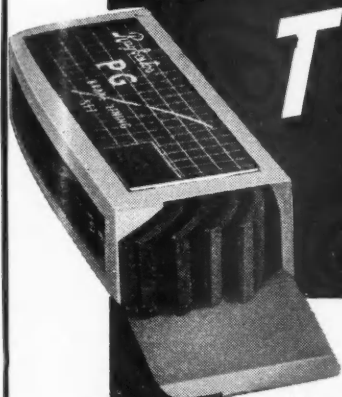
THERE'S more than just "something" to this Pennsylvania Dual-Purpose Tread—it really does the trick. It defeats heat—and that means that here is a tire that demands recognition on your part—for it can demonstrate its savings on road tests—on added mileage.

This isn't theory—it is hard, proven facts. It will pay to get all the details.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PENNA.

PENNSYLVANIA TRUCK TIRES

It's the MARGIN of SAFETY THAT COUNTS!



Whether lifting loads with a slender wire cable, or stopping them with a few feet of brake lining, it's the margin of safety above the estimated stress that counts!

Raybestos Heavy Duty Brake Lining is built with a margin of safety which matches that customarily allowed in the greatest engineering projects—300%! This brake lining will stop a truck carrying 4 times its rated load capacity. That's stopping power! That's safety!

The way to get this greater brake safety for your vehicles is to write, on your letterhead, for the new Raybestos Truck Recommendation Guide. It will show you how. It's free.

THE RAYBESTOS DIVISION
of Raybestos-Manhattan, Inc.
BRIDGEPORT, CONN.

Brake Lining, Clutch Facings, Fan Belts, Hose
For Cars, Trucks, Buses



Raybestos

AMERICA'S BIGGEST SELLING
BRAKE LINING

YOUR 2 BEST FRIENDS for HIGHWAY SAFETY



WAR IS HELL

(CONTINUED FROM PAGE 112)

case they simply "impress" it into the service and the fleet operator goes without a truck. Reports filter through which indicate that some small fleets have had 60 per cent of their trucks "impressed."

Replacement of impressed trucks is not as simple as finding the money and buying replacements. Early in the war fleet buyers arrived at fac-

ories to take deliveries of trucks that had been bought, paid for, built to specifications, painted and lettered, only to find out that the government had beaten them to delivery.

By government regulation trucks can no longer change hands without government approval. It is now against regulations to buy or sell a truck unless written permission to do so is in your possession. In order to get this permission it is necessary to explain why the deal is desirable, what you are going to do with the

truck, and then if the Ministry of Transport thinks that the new truck is essential (to the war, not to you) you may get the truck provided you can find a factory that will take the order for the type of truck you want. The trade papers have been warning British operators that because of the metal shortage, there will probably not be any new vehicles available for a long time.

The operators who specialize in seasonal cargoes have even a more perplexing problem. Bound down by government restrictions even in peace time, it is impossible for English operators to vary their loads to level off the hills and valleys of the business chart. This results in much more idle time for trucks than is customary in this country.

The operators hastened to make their written presentations for additional trucks and for supplementary fuel allowances. Agreeable officials accepted the pleas but apparently did nothing about it. Last advices indicate that the trucks that normally handle the soft fruit crop were not going to be able to do it this year and no concise action had been taken which would enable the beet haulers to make concrete plans. As a matter of record the railroads still had their hand in the arguments despite the fact that they are unable to cope with the loads that they have now.

When a war occurs it is normal to expect that all forces will join hands and fight for the common weal. Unquestionably the railroads have contributed to the defense of England. But some of their effort seems to have been expended in taking advantage of the war to improve their competitive position. They have managed to dominate the Road and Rail Conference with the result that freight that was formerly handled by trucks has been regulated to the railroads. The publicly announced reason for these regulations has been the conservation of liquid fuel, even while officers on leave are able to draw fuel for touring and passenger car owners can use rations of liquid fuel for any purpose they please.

The situation has put a number of truckers on the rocks. It is interesting to note that an English daily paper reports that the railways are now engaged in "buying up haulers at knockout prices."



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COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

HALL ABOVE ALL



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**SYNCHRONIZED
VALVE SERVICING EQUIPMENT**

CHEVROLET FOR '41

(CONTINUED FROM PAGE 33)

fiber insulator at the secondary terminal to provide more effective insulation. The new condenser has 50 per cent higher capacity across the breaker points, improving engine operating characteristics at low speeds.

Ten-millimeter spark plugs replace the 14-millimeter plugs formerly used. They are stronger mechanically, and more durable under heavy-duty con-

ditions. They warm up more rapidly when the engine is started, but operate cooler at full throttle.

Carburetor refinements also contribute to better engine operating and economy characteristics. Carburetor barrel on conventional truck engine is increased from 1 7/16 to 1 1/2 in. The new low speed jet has a larger fuel orifice to lessen the possibility of clogging, and the orifice is 1/4 in. lower to eliminate stalling of the engine on a very rapid deceleration. Accelerator pedal effort is reduced,

and the pedal is made more accessible. All trucks are equipped with treadle-type pedal.

Oil consumption is lowered slightly by better control of the valve-stem lubrication spring covers being added at the intake valves to shed oil from the stems. Tops of the exhaust valve guides are tapered to prevent deposit of excess oil on the stems. Valve rocker arms are made of a new alloy steel having unusual wear-resisting qualities. This has made it possible to eliminate bronze rocker arm bushings, and rocker arms are now grandoized to protect bearing surfaces.

Operators who use their truck in extremely heavy-duty service will be especially interested in the new, more powerful Chevrolet truck engine now available as regular production equipment, at slight extra cost, for all heavy-duty 1 1/2-ton models. This new powerplant is of 235.5 cu. in. displacement, bore being 3 9/16 in. and stroke 3 15/16 in., and compression ratio 6.62 to 1. It develops 192 lb.-ft. of torque, as compared with 174 lb.-ft. in the conventional engine.

The engine is fundamentally the same as the conventional engine, but larger bore necessitates new pistons and rings, and longer stroke requires a different crankshaft. The block is 1/8 in. higher, but with this exception, overall dimensions are unchanged. The weight is only a few pounds greater than that of the conventional powerplant. The new engine is completely interchangeable with the conventional unit, and since practically all parts are identical, there is no parts replacement problem.

The new truck muffler on all series is of unit construction, of the reversing flow type with two tubes and three baffles. Its more solid construction and reverse-flow design provide a quieter exhaust. The muffler tail pipe extends to a point near the rear of the frame.

The driven-disk coil springs of the clutch on the 3/4-ton and heavy-duty trucks have been improved for quieter operation. On the light-delivery and 3/4-ton models, three-speed transmission gears are carburized to give harder, longer-wearing surface, needle bearings being added at the countershaft gears. On the remaining series, the four-speed transmission rear bearing retainer is revised to take the Hotchkiss type front pro-

(TURN TO PAGE 118, PLEASE)

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in Less Time*



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No installation — workman simply rolls the Kellogg Portable Lift under the axle and turns on the air. Up goes end of car (front or rear) to desired height, as much as 56". Just that simple. No need to move cars. Naturally, lubrication jobs, brake service, washing, inspection all take less time—release your units quickly for more work. Kellogg Portable Lifts are not expensive — but they're time and money savers.

FASTER WASHING WITH THE HARDIE-KELLOGG CAR WASHER—Less time, yes—and less labor, less materials needed to keep your units clean. Hot water or solutions at high pressure clean worst grease or mud accumulation in a jiffy. Hardie-Kellogg Car Washers available in a size to meet your needs.

Sales Offices: 332 S. Michigan Ave., Chicago, Ill.; 230 Park Avenue, New York, N. Y.; 3355 East Slouson Ave., Los Angeles, Calif.; 4785 First Ave., South, Seattle, Washington; Niagara Falls, Ont., Canada.

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TRAILMOBILE

OUTSIDE FRAME TRAILER

Here's the trailer that makes real money for operators. Light in weight, it permits more profitable payloads without exceeding gross load limits.

Many other profits of modern trucking come from the qualities that are built into this finer trailer. Faster schedules — improved customer relations — less fuel and operation costs — rock bottom maintenance expense. These are economies and profits that the Outside Frame Trailmobile gives you every mile and every day you own it.

Each part of this new and different trailer has been carefully considered for the actual job it has to accomplish. Redesigned and reformed—strengthened here—lightened there—made of standard steels welded and assembled by standard commercial methods to make the strongest load carrying unit known. Yet it is hundreds of pounds lighter, by actual scale weights, than older designs.

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700#	2.80	3.15	3.50	3.85	4.00
800#	3.20	3.60	4.00	4.40	4.80
900#	3.60	4.05	4.50	4.95	5.40
1000#	4.00	4.50	5.00	5.50	6.00

Figure your increased profit. If your average rate is 50c and you increase payload only 700 lbs., you make \$3.50 more every trip — \$21.00 per week — over \$1000 more profit every year.

The Easy Pulling Trailer



And you don't have to pay a premium price for all these advantages. The cost to you is in the bracket of standard production trailers. May we give you all the details of this Outside Frame Trailmobile to help you make more trucking profits?

THE TRAILER COMPANY OF AMERICA, CINCINNATI, OHIO

New York, Chicago, Oakland, Calif. — Sales and service in every principal marketing center.

(CONTINUED FROM PAGE 116)
 peller shaft, which is standard on the 134½-in wheelbase ¾-ton, the heavy-duty conventional and the 132⅝-in. and 158⅞-in. cab-over-engine models. Hanger supports for all short propeller shafts are rubber-insulated to prevent chassis movement from stressing the shafts. In the light-delivery truck, the propeller shaft and torque tube are 3 in. longer, and each is increased 5/16 in. in diameter.

In the ¾-ton models, two needle bearing universal joints are provided

on the Hotchkiss type rear propeller shaft, with a bushing-type joint at the transmission. Three needle bearing universals are provided on the 134½-in. wheelbase ¾-ton, the heavy-duty conventional, and the two cab-over-engine models just mentioned.

New differential bearings with increased load capacity, introduced during 1940 model production, are continued on the light-delivery and ¾-ton. The axle connection to the torque tube of the ¾-ton and the

heavy-duty models is modified to take the Hotchkiss type drive.

Rear suspension has been revised for better spring, some of the modifications being incidental to the change to Hotchkiss-type drive. The ¾-ton and the panel truck on the heavy-duty chassis have new two-stage spring with reduced rate for more comfortable ride with light or heavy loads.

Composite brake drums, and new linings with a friction coefficient to match the new drum surface, are provided.

An important improvement has been made in the steering gear of all trucks. The new gear, of a ball-bearing worm-and-nut type, reduces effort greatly, and embodies a much higher ratio. The nut is "threaded" to the worm by a train of ball bearings. When the steering shaft is turned, the balls are forced up or down through the nut, to pass through a return tube in a continuous circuit.

From the appearance standpoint, the truck line is entirely new. The grill has a distinctively truck appearance of massiveness. It is designed in two parts, with horizontal bars in the upper section, and vertical bars in the lower section. A wide-chromium plated molding separates the two grill sections, and an attractive shield-shaped Chevrolet emblem is mounted on the lower grill. Styling on the cab-over-engine follows the general lines of that of the conventional trucks.

Conventional models have new louvers consisting of two lines of openings on each side, outlined by three stainless steel moldings.

The cab-over-engine hood is redesigned, with the top hinged at the rear, and its opening affords easy access to the front engine compartment. Fenders are more massive, and valleys are eliminated.

Driver comfort has been improved by lengthening cabs, modifying the slope of seat backs, and providing better sealing around pedals and steering gear. The cowl ventilator has an easier-operating control mechanism.

New wheelbase lengths for the 1941 Chevrolets are: light delivery, 115 in.; ¾-ton, 125¼ in.; ¾-ton long wheelbase, 134½ in.; heavy-duty conventional, 134½ and 160 in.; heavy-duty cab-over-engine, 109⅞, 132⅝ and 158⅞ in.



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★ WEAVER ★

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 NOVEMBER, 1940

MODERN ELECTRICAL SYSTEMS DEMAND A

Modern BATTERY CABLE

● Voltage drop, between battery post and cable terminal, or between terminal and conductor, increases with corrosion. And brass inevitably corrodes when exposed to sulphuric acid fumes.

Starting power is stolen—always.

With voltage-regulation the battery is starved.

Without voltage regulation, the entire electrical system is overloaded and its life shortened.

Sterling Battery Cables with the non-corrosive terminal overcome all of this. That's why more than 6,000,000 vehicles have been factory-equipped with this type of terminal within the past few years.

Your Sterling jobber has these cables for you in an attractive offer—a special assortment of cables suited to your fleet's requirements, including the Sterling Cable Tester. This tester is a high-grade, precision instrument which lets you *measure* voltage drop and shows *when* cables should be replaced. For complete information, mail the coupon.

The ELECTRIC Auto-Lite COMPANY
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The non-corrosive alloy of the Sterling Terminal, pressure-cast to form a complete seal over conductor and insulation, positively will *not* corrode. And because of the imbedded steel core, this terminal will *not* stretch. It assures a permanently tight and electrically efficient connection. The Sterling Terminal, the famed Power-Lug and the full-gauge copper conductor virtually form one solid mass of current-carrying metal, guarding against resistance from either corrosion or mechanical causes.

STERLING CABLE TESTER

An accurate, high-grade precision voltmeter, ordinarily priced from \$6.00 to \$8.00. Special dial shows at a glance when battery cables need replacement. Useful for dozens of other purposes in any fleet operation.



Auto-Lite [ⓐ] Sterling BATTERY CABLES

The ELECTRIC AUTO-LITE CO., Wire Division, Port Huron, Michigan

Please send full information about Sterling Battery Cables and the special assortment with which we can obtain the Battery Cable Tester.

Name.....

Firm Name.....

Street Address.....

City and State.....

ICC SAFETY EQUIPMENT

(CONTINUED FROM PAGE 55)

ped with brakes on all wheels, excepting any full trailer, semitrailer, or pole trailer of a gross weight not exceeding 3000 lb.; provided, however, that the gross weight of any such full trailer or four-wheel pole trailer without brakes shall not exceed 40 per cent of the gross weight of the towing vehicle, and that the gross weight of any such semitrailer or two-wheel pole trailer without brakes shall not exceed 40 per cent of the gross weight of the towing vehicle when connected to the semitrailer or two-wheel pole trailer.

Every new full trailer, semitrailer, and pole trailer (except those weighting 3000 lb. gross or less), shall be equipped with brakes of such a character as to be automatically applied upon break-away from the towing vehicle, and means shall be provided to maintain application of the brakes in such case for at least 15 minutes.

In drive-away operations brakes need be operative only on towing vehicle, provided the combination meets the specified stopping requirements. (See above.)

Bulbs (Spare)

At least one spare electric bulb must be carried for each kind of electric lamp used

for any of the electrical lighting circuits on the motor vehicle. (All vehicles.)

Chains (Tire)

One set of tire chains for all vehicles likely to encounter conditions requiring them.

Chains (Safety)

Every full trailer shall be coupled to the towing vehicle with safety chains adequate to prevent separation from the towing vehicle should the towbar fail.

Defroster

Every motor vehicle (equipped with a windshield) when operating under conditions such that ice or frost would be likely to collect on the windshield shall be equipped with a device or other means of preventing or removing such ice or frost.

Fire Extinguisher

On all vehicles, at least one fire extinguisher, of a type inspected and labeled by Underwriters' Laboratories, Inc., 207 E. Ohio Street, Chicago, Ill., under Classification B, and utilizing an extinguishing agent which does not need protection from freezing, properly filled and securely mounted in a bracket. (Minimum size: one-quart carbon tetrachloride type, or two-pound carbon dioxide type.)

Flags (Red)

On all vehicles, at least two red cloth flags, not less than 12 in. sq. An additional flag, same size, must be provided when projecting loads are carried.

Flares

On all vehicles, three flares or three red electric lanterns; each flare (liquid-burning pot torch) or red electric lantern shall be capable when lighted of being seen and distinguished at a distance of 500 feet under normal atmospheric conditions at night time; each flare (pot torch) shall be capable of burning for not less than 12 hours in 5-miles-per-hour and wind velocity, capable of burning in any air velocities from zero to 40 miles per hour, substantially constructed so as to withstand reasonable shocks without leaking, and shall be carried in a metal rack or box; each red electric lantern shall be capable of operating continuously for not less than 12 hours and shall be substantially constructed so as to withstand reasonable shocks without breakage.

NOTE.—Flares (pot torches), fusees, oil lanterns, or any signal produced by flame, shall not be carried or used as warning signals for motor vehicles used in the transportation of inflammable liquids or inflammable compressed gases in cargo tanks; but in lieu of such flares and fusees, three red electric lanterns shall be carried.

Fuses

On all vehicles at least one spare electric fuse of each kind and size used for any of the electric lighting circuits on the motor vehicle.

(TURN TO PAGE 122, PLEASE)

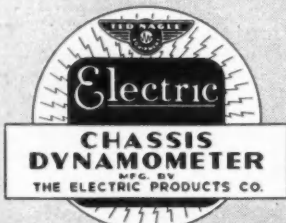
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It's not magic but simply works like it—the ELECTRIC CHASSIS DYNAMOMETER will POWERIZE every truck or bus in your fleet to show amazing gains in mileage per gallon—increase in power—bigger haulage. • Monthly maintenance operating checks will be eliminated and recordings can be taken every few days to get high-peak performance and gas savings. Fleets throughout the nation can increase fuel savings up to two miles or more per

gallon with the ELECTRIC CHASSIS DYNAMOMETER. • Regardless of the number in the fleet—regardless of the cost—the ELECTRIC CHASSIS DYNAMOMETER will pay for itself by the savings it brings about in a year's time!

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Gentlemen: Please rush me information regarding your CHALLENGER ELECTRIC CHASSIS DYNAMOMETER and your POWERIZING PROGRAM.

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AUTO-LITE ANNOUNCES NEW STARTING AND GENERATING EQUIPMENT FOR DIESEL ENGINES

TWO-STEP STARTING MOTOR MESHES ON REDUCED VOLTAGE, CRANKS ON FULL, PROLONGS LIFE OF EQUIPMENT...VOLTAGE AND CURRENT REGULATORS PROTECT ELECTRICAL SYSTEM...GENERATORS AVAILABLE IN WIDE RANGE OF CAPACITIES AND VOLTAGES TO HANDLE EXCESS LOAD REQUIREMENTS

STARTING MOTORS are available in both manual and automatic pinion shift types. The manual shift is foot pedal operated and the automatic shift is dash push button operated. In both types, pinion and flywheel are engaged at reduced volts. When the teeth are fully meshed, the full voltage is applied — even in very cold temperatures, the enormous torque supplied spins the engine at high speed for quick starting. This new advancement provides quieter and more efficient starting and eliminates possibility of damage to housing, pinion or ring-gear. Motors can be supplied for 12, 24 and 32 volt systems capable of cranking Diesel engines up to 350 cubic inch displacement. Special dash push button control can be supplied with the automatic shift.

HEAVY-DUTY VOLTAGE AND CURRENT REGULATOR is capable of maintaining voltage to within plus or minus 2%. Consists of 3 units in one water and dustproof assembly: 1. Cut-out Relay (Circuit Breaker); 2. Voltage Regulator; 3. Current Regulator.

SHUNT GENERATORS are available for 12, 24 and 32 volt systems in capacities of 100 to 1,000 watts. This provides an ample range of capacities for such overload requirements as special lights, two-way radio, etc. Auto-Lite Heavy-Duty Generators are ventilated by a system which has proved to be the simplest and most efficient yet devised.

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Auto-Lite's New Starting and Generating Systems for Diesel engines offer definite advantages. The exclusive two-step starter helps prevent damage to housing, pinion and ring-gear — lengthens equipment life. Designed and built by the World's Largest Independent Manufacturer of Automotive Electrical Equipment.

23 DIVISIONS — MORE THAN 400 AUTOMOTIVE PARTS AND APPLIANCES

AUTO-LITE **STARTING
LIGHTING
IGNITION
BATTERIES**

ICC SAFETY EQUIPMENT

(CONTINUED FROM PAGE 120)

Fusees

On all vehicles using flares, as warning signals, at least three red-burning fusees, each fusee shall be made in accordance with specifications of the Bureau of Explosives, 30 Vesey Street, New York, N. Y., and so marked, and shall be capable of burning at least 15 minutes.

Fuel Tank

Every fuel tank or container supplying fuel for the propulsion of any motor vehi-

cle shall be of substantial construction free from leaks and securely attached to the vehicle in a manner which constitutes good practice. No part of the tank or intake pipe shall project beyond the sides of the vehicle. No reserve supply of fuel shall be carried except in a properly constructed and mounted tank.

Glass (Safety)

On all vehicles, whenever glass is replaced in the windshield, in the window next to the driver, or in the rear window of the driving compartment of a truck or tractor, the replacement shall be made with safety glass, which shall conform to

the requirements contained in the "American Standard, Safety Code for Safety Glass for Glazing Motor Vehicles Operating on Land Highways, Z 26.1—1938," approved March 7, 1938, by the American Standards Association, 29 West 39th Street, New York, N. Y.

Case-hardened glass shall not be used for replacement purposes in any windshield, door, or window opening of any motor vehicle.

On all new vehicles whenever glass is used in the windshield, in the window next to the driver, or in the rear window of the driving compartment of a truck or tractor, it shall be safety glass which shall conform to the requirements specified above.

Horn

Every vehicle shall be equipped with a horn and actuating elements which shall be in such condition as to give adequate and reliable warning signal.

Lan tern (Red)

At least one red lantern on all vehicles where projecting loads are carried.

Lights & Reflectors

Every truck regardless of size must have two headlights in front, one on either side; one red tail light; one red or amber stop light, and two red reflectors, one on either side at the rear and so placed as to indicate as closely as possible the extreme width of the vehicle. In addition, trucks 80 in. or more in width must carry two amber clearance lights in front; two red clearance lights (in addition to reflectors) at rear; one amber side marker light on each side near the front; one red side marker light on each side near the rear; one amber reflector on each side near the front, and one red reflector on each side near the rear.

All truck-tractors regardless of size require the two front amber clearance lights, and all semi or full trailers regardless of size if over 3000 lb. gross weight require the same lights as trucks 80 in. or more in width (see above) including front, rear and side lights and reflectors.

Semi-trailers of less than 3000 lb. gross weight must have one red light at the rear, two red reflectors at the rear and a red or amber stop light if the stop light of the towing vehicle is obscured.

Pole trailers must have one red lamp and two reflectors (so placed to indicate extreme width of trailer or load) at the rear, on each side a combination marker light showing amber to front and red to side and rear, and one red reflector. Where electric marker lamps are used, they must be permanently attached. A red lantern must be used on end of load at night.

Side marker lamps may be combined with front or rear clearance lights using the same light source. All must be visible within 500 ft. at night. Stop lights must be distinguishable at 100 ft. in daylight. Reflectors must be readily visible at night from 500 to 50 ft. when in the direct ray

(TURN TO PAGE 124, PLEASE)

MOVING ONE MILLION MEN



A TRIBUTE TO THE INITIATIVE AND ABILITY OF THE MOTOR TRUCK AND BODY MANUFACTURERS OF AMERICA

Providing adequate transportation for a million soldiers and for the food, supplies and ammunition which they require, is an essential part of the National Defense Program. When and if a crisis comes, the necessary mass movements of men and materials will be carried out *quickly, efficiently and safely.*

For this solemn hour—when the very "Life, Liberty and Pursuit of Happiness" of every American may be challenged—the Motor Truck Manufacturers of this great nation are already well prepared. Army vehicles, small and large—from midget scout cars to ten-ton armored trucks—will soon be rolling off the production line at an almost unbelievable rate of speed.

It is truly a Herculean task that the American motor truck industry has undertaken, for this vital work is in *addition* to its regular peace-time pursuits. Only the initiative, resourcefulness and ability to overcome all obstacles, which are inherent characteristics of this

great industry, make such a program possible.

To these qualities, found only in the world's greatest democracy where private industrial enterprise has been fostered, The Sherwin-Williams Company pays tribute.

★ ★ ★

As is practically every American industry today, The Sherwin-Williams Company is doubling its efforts both to keep pace with the demand from private business and at the same time to provide the "Specification" materials required for National Defense.

To supply *lustreless* olive-drab enamels for mobile army units and at the same time to produce colorful, *high-gloss* Kem Transport Enamels for commercial cars, is typical of the ability of The Sherwin-Williams Company to play its part in this great program.

THE SHERWIN-WILLIAMS CO.
CLEVELAND, OHIO



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You Save:

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St. Louis, Missouri



Division of American Car
and Foundry Company

ICC SAFETY EQUIPMENT

(CONTINUED FROM PAGE 122)

of a normal headlight beam.¹ One or both of the reflectors may be incorporated with the rear tail light.

Backing lights may be used provided that they are so connected as to be inoperative except when the vehicle is in reverse gear.

On new vehicles all lamps shall be permanently mounted and shall be electric. Headlamps shall be of the dual or multiple beam type.

¹Any reflex reflector approved by any of the States listed below, or by any other State having equivalent or superior requirements, or any reflex reflector meeting the requirements as set forth in "S. A. E. Recommended Practice" for reflex reflectors, as promulgated by the Society of Automotive Engineers, 29 West 39th St., New York, N. Y., shall be deemed to meet the requirements of Rule 3-3114 with respect to performance characteristics. The listed States are New Hampshire, Massachusetts, Rhode Island, New York, and California.

Mirror

Every truck or tractor shall be equipped with at least one rear vision mirror firmly attached to the vehicle and so located as to reflect to the driver a view of the highway to rear.

Reflectors (See Lights)

Speedometer

Each new truck or tractor must be

equipped with a speedometer or tachometer which shall be operative with reasonable accuracy.

Tires

Tires shall be provided on all vehicles adequate to support the maximum gross weight thereof.

Tow Bar

Every full trailer shall be provided with a tow bar adequate for any weight drawn, without excessive slack but with sufficient play to allow for universal action of the connection, and with suitable locking means to prevent accidental separation. Tow bar and trailer must be so designed that the trailer will follow substantially in the path of the towing vehicle without whipping or swerving from side to side.

Wiring & Connections

All all new vehicles, each piece of electrical equipment, except high-tension ignition circuit, shall be connected to the source of its power with suitably insulated stranded wire of electrical conductivity not less than the equivalent of No. 16 B & S gage solid copper wire. This shall not be so construed as to prohibit the use of the frame or other metal parts of such motor vehicle as a return ground system. The wiring and all connections and contacts, except the starter circuit, shall in any event be such that, with all electrical devices on the motor vehicle, except the starter, in operation and the generator operating at its maximum output, the voltage drop to any lamp or other device shall not be excessive.

Windshield Wiper

Every motor vehicle (having a windshield) shall be equipped with at least one windshield wiper for cleaning rain, snow or other moisture from the windshield in order to provide clear vision for the driver.

MACK FOR '41

(CONTINUED FROM PAGE 41)

Brakes on all these new tractor and six-wheel models are air-operated, while the new model LF and LJ truck models have hydraulically operated brakes with a vacuum-booster.

The LF truck, LFT, LHT, LJT tractor models, and the LF six-wheeler and LH six-wheeler all have frames of high carbon heat-treated steel, whereas the new model LJ truck and the LM six-wheeler have chrome manganese heat-treated steel frames. All frames employ box girder type cross members.

All spring ends are suspended in exclusive rubber shock insulators both front and rear.

HOW IS YOUR FIRE DEFENSE?



1 qt. size
SOS Fire Guard

The new 1941 Heavy Duty S. O. S. FIRE GUARD one-quart extinguisher, approved by the Underwriters' Laboratories—MEETS ALL I.C.C. REQUIREMENTS.—Because of its unusual construction features, transportation companies, major oil companies, aircraft manufacturers and the United States Gov't. are extensive purchasers of FIRE GUARD.

I.C.C. regulations call for AT LEAST ONE APPROVED EXTINGUISHER . . . insist upon the best . . . the Heavy Duty S.O.S. FIRE GUARD.

THE GENERAL FIRE TRUCK CORPORATION

Established 1903

2200 East Jefferson Ave., DETROIT, MICHIGAN

New York • Chicago • Los Angeles • San Francisco

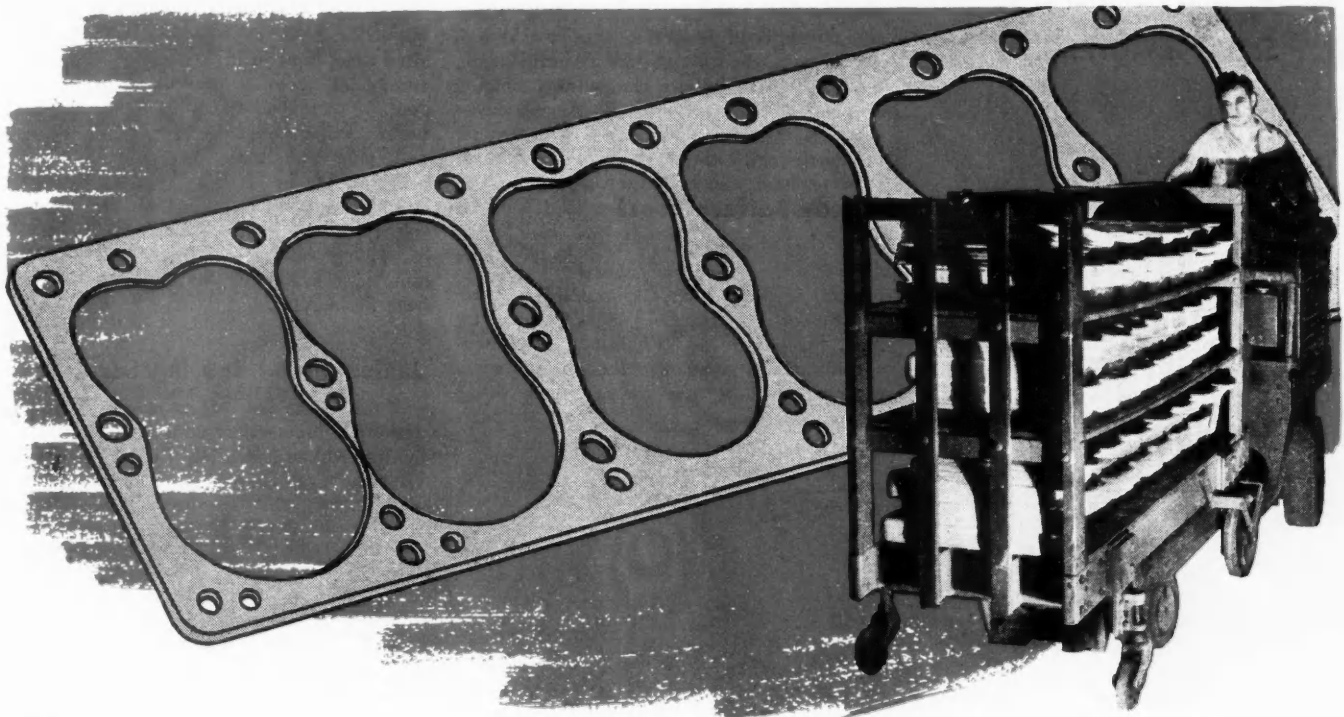
National Defense is the theme of business and The GENERAL FIRE TRUCK CORP. is playing its part in the preparedness program. BUT . . . are YOUR defenses against FIRE ready for action? Is your equipment up to date, efficient, reliable? It is if you've installed the new 1941 Heavy Duty S. O. S. FIRE GUARD.

1941 QUALITY CHART

REVEALING ENGINEERING EVIDENCE
THE 14 IMPORTANT FEATURES FOUND ONLY IN
THE HEAVY DUTY S.O.S. FIRE GUARD

- 1—SAFETY PHLARE.
- 2—NON-SEIZING HANDLE LOCK.
- 3—CAP OUTSTANDING DESIGN.
- 4—LEAKAGE AT PISTON ROD OPENING IN CAP DEFINITELY ELIMINATED.
- 5—LIFE-TIME BALL CHECKS.
- 6—NON-BINDING PLUNGER ROD PACKING BOX ASSEMBLY.
- 7—NON-PUNCTURING DISCHARGE SEAL.
- 8—ONLY ONE SOLDERED JOINT INSIDE OF EXTINGUISHER.
- 9—PLUNGER ROD NOT WEAKENED BY THREADING END TO ATTACH TO HANDLE.
- 10—BRACKET HOLDS EXTINGUISHER SECURELY.
- 11—BRACKET PROVIDED WITH ANTI-RATTLE BOSS.
- 12—ADDED SAFETY IN BRACKET.
- 13—NEW: DOUBLE-ACTION BOTTOM PUMP BEARING SEAL.
- 14—NEW: NON-BINDING, DOUBLE-ACTING TOP PUMP BEARING SEAL.

No Leakage from Vibration on Trucks, Aircraft, Boats, Etc.



Each and every Victor Gasket is as carefully made as though Victor's reputation depended upon ITS performance . . .



Every modern machine, material and scientific improvement known to the art of gasket making, and many ideas developed exclusively by Victor, are used in making gaskets that bear the Victor name.

As a result, Victor Gaskets are the standard of the industry for exactness of design, precise finish and uniformity.

Every Victor Gasket of the same design is an exact counterpart of the others, insuring identical sealing perfection in every motor.

A Victor Gasket Guide will be sent to you upon request.

Victor Manufacturing & Gasket Co., P. O. Box 1333, 5750 Roosevelt Road, Chicago, Ill., U. S. A.



WORLD'S LARGEST GASKET MANUFACTURER

VICTOR

GASKETS • OIL SEALS • GREASE RETAINERS • SHEET PACKING • GASKET COMPOUNDS

NEW ITEMS OF SHOP EQUIPMENT

(CONTINUED FROM PAGE 60)

Transfer Punch

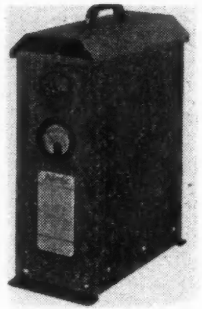
Transferring screw and stud holes as well as blind drill holes from a drilled surface to another that is to be drilled in duplicate is said to be greatly simplified by the use of Neilsen transfer screw and punch sets now available from the Neilsen Tool & Die Co., Berkely, Mich. The Nielsen layout punch is made to transfer drill holes through a drilled section in di-

ameters from 17/64 in. to 59/64 in. When the punch head is struck, the case hardened removable tip transfers the drill center and drill circle. The screws which feature uniform height shoulders may also be used in transferring blind screw and stud holes with the transfer screws.

Handy Battery Booster

An improved Handy battery booster, designed to substantially charge a 6-volt battery in two hours, is available from the Baldor Electric Co., 4351-59 Duncan Ave., St. Louis, Mo. Charging at a rate of 30 to 35 amperes, the booster is equipped with a time switch which dis-

continues the charging action at the desired time. Standard equipment includes two 15 ampere bulbs, clips, cord and plug and the time switch. It comes in 115 or 230 volt types. Bulletin 82, giving full details, is available from the makers.



Junior Model Bearing Servicer

A junior model of its standard front wheel bearing servicer is now being offered by the Ahlberg Bearing Co., 4702 South Whipple St., Chicago, Ill. A bearing



packer and a knock-out tool is incorporated in the enameled steel unit, which provides ample storage space for replacement bearings. The unit is small enough to be installed on a counter, bench or wall.

Low Cost Brake Reliner

Designed especially for the small service

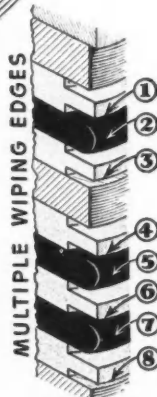


shops, a new Grey-Rock horizontal-feed brake reliner known as Model HF is of-
(TURN TO PAGE 131, PLEASE)



RUN—pass—or kick, there's no substitute for the razzle-dazzle performance of Simplex "LL"s. Tackle any scrub or regular—oil pumper or puddle jumper and this remarkable Simplex reconditioning ring will make 'em run again like only "LL" can. No compression passes into the open when "LL" is in the line-up; no scoring of cylinders—no piling-up of carbon.

Don't sit on the sideline and watch your opposition score touchdown after touchdown behind this great star of the service gridiron. Put "LL" in *your own* lineup and throw the "tough guys" for a loss. Get into a huddle today with your near-by Simplex distributor.



For quicker seating and longer life, segments of different degrees of hardness are alternated in the groove. The softer, deeper segments wear down while the ring is seating, protecting the cylinder wall. The tougher, hardened sections carry-on after the seating, for long life.

SIMPLEX PRODUCTS CORP.
3820 Kelley Avenue • Cleveland, Ohio



SIMPLEX "LL" PISTON RINGS

Do a better job — give 'em "LL"!

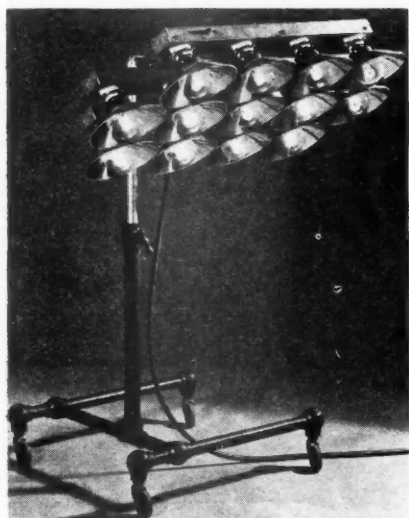
SHOP EQUIPMENT

(CONTINUED FROM PAGE 128)

ferred by the United States Asbestos Div., Raybestos-Manhattan, Inc., Manheim, Pa. The complete unit consists of a Grey-Rock No. 63 Foot Riveter with a direct drive countersinking and grinding unit mounted on the same pedestal. Powered by a 1/4-hp. motor with a built-in switch and a 6-ft. cord, the reliner performs every operation necessary for complete brake shoe relining. The unit sells for \$39.75.

Nalco Infra-Red Units

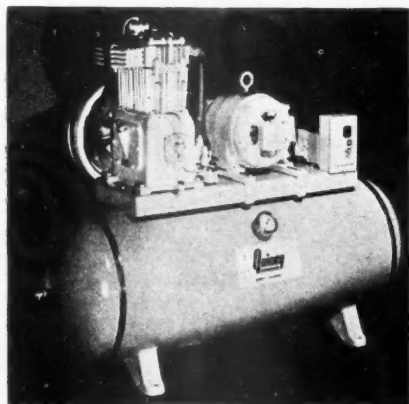
Infra-red drying equipment is now available from the North American Electric Lamp Co., St. Louis, Mo. The basic unit is a strip of lights, numbering from three to eight, complete with Dritherm lamps, gold-plated reflectors and porcelain sockets mounted on a rigid conduit. Combinations



of these strips may be used to form permanent banks or may be mounted on a portable stand for smaller operations. A special five-light portable unit is available for small paint jobs and touch-up work. Reflectors are furnished in two sizes, 7 1/8 in. and 10 in., while bulbs are available in either 240 or 260-watt sizes.

Quincy Offers 1941 Line

A new line of 28 air compressors, ranging in size from 1 to 45 c.f.m. piston dis-



placement and available in single stage-single cylinder, single stage-duplex cylinder and two-stage models, has been announced by the Quincy Compressor Co., Quincy, Ill. The new units, finished in a two-tone color combination, are equipped with a large muffler and a new copper finned aftercooler to insure low temperature air entering the tank. Other features include a constant level oiling system, enclosed dustproof crankcase, greater radiation area on cylinders and cushioned discharge valves.

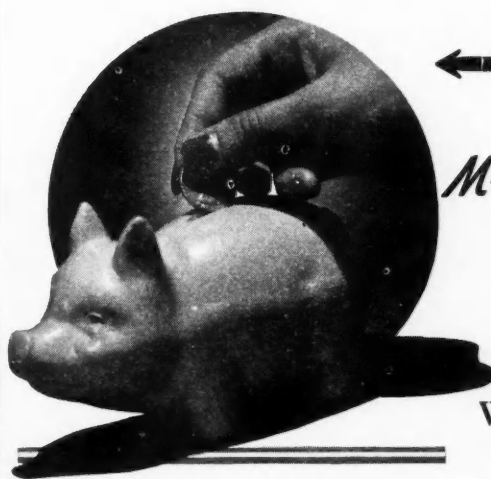
Benwood-Linze Charger

Only 20 to 40 min. is required to charge

an average automobile storage battery with the new B-L Supercharger, manufactured by the Benwood-Linze Co., 19th and Washington Ave., St. Louis, Mo. A combined testing and charging unit, it will charge a battery in the car, with the operation automatically controlled by a time switch. The instruments, mounted on an attractive panel, will indicate defective cells, dilution of the electrolyte and sulphation.

Greater Light with Bear Outfit

A headlamp reflector re-silvering outfit, claimed to produce a coating which has 20 to 30 per cent greater light output and brilliant. (TURN TO NEXT PAGE, PLEASE)



← The Savings are
INSIDE
Mr. Fleet Operator

With FYBR-TECH
two way saving

Wide awake fleet operators and truck builders should specify FYBR-TECH for truck interior panelling and save *two ways*, (1) By reducing chassis weight and increasing pay-load, (2) By providing a sturdy, long-life interior panelling which will both cut down repair bills and protect the load.

FYBR-TECH is a durable, lightweight panel of unusual strength, which is moisture proof and will take an excellent paint finish. FYBR-TECH is free from face joints and will not warp, check or split. FYBR-TECH can be readily drilled, punched, stamped and sawn. Available in extra large panels, 48"x96", it is easy to install. Being moisture proof, FYBR-TECH is an ideal lining for refrigerated trucks. FYBR-TECH can be readily moulded and will take sharp bends; it is thus also very suitable for partitions, shelves, racks, and component parts such as dashboards, instrument panels, etc. It is also very suitable for exterior panels.

FYBR-TECH is one of several outstanding panels in the "TECH" range. For further information regarding FYBR-TECH and other panels, fill out the ready-to-mail postcard on Page 195, or write direct to



A Wisconsin haulage company specified FYBR-TECH for the lining of the truck pictured above. FYBR-TECH is also being used on 600 new Greyhound coaches.

TECHNICAL *Ply-Woods*

228 NORTH LA SALLE STREET • CHICAGO, ILLINOIS

JAMES R. FITZPATRICK, DIRECTOR • A. N. CARSTENS, ASSOCIATE

REMEMBER

—There is a
TECH panel
for every commercial need

SHOP EQUIPMENT

(CONTINUED FROM PAGE 131)

liancy than that of a factory plated reflector, is available from the Bear Mfg. Co., Rock Island, Ill. Only 10 to 15 minutes is required for the job, which consists of polishing the reflector surface with a motor-driven buffer, dipping the reflector into the plating solution and then polishing by hand with silver polish. Equipment for handling every part of the job is furnished in the complete outfit, with the exception of the motor. Any ordinary bench grinder or motor is suitable.

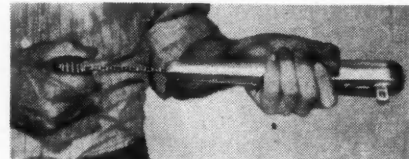
The Bear Mfg. Co. also has announced



the perfection of a jumper lead outfit to detect defective wiring and voltage loss in the headlight wiring circuit.

"Zip-Action" Ratchet Wrench

"Speed-Ratch," a newly designed ratchet wrench that features a pull-chain for rapid removal and fastening of nuts, is now available from the Beall Tool Co., East Alton, Ill., Div. of Hubbard & Co. The pull-chain arrangement is used for running off and on freely turning nuts in hard-to-reach places, while initial loosening and final tightening



are accomplished by using the tool as an ordinary ratchet wrench. Speed-Ratch is constructed of forged steel, with self-lubricating inner mechanism. The reversible 1/2-in. square drive spindle fits 35 sizes and types of sockets. Measuring 10 1/2 in. in length and weighing under 2 lb., the tool lists at \$6.00 f.o.b. factory.

TRAILER PROGRESS

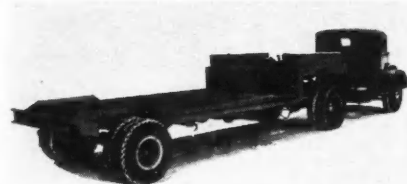
(CONTINUED FROM PAGE 49)

cost the operator anything in increased wages but because of the improvement in his tool he has earned more for the operator.

Regarding less power, the case cannot be presented so concisely. However if the power unit was correctly engineered for the work it is doing and the amount of work is lessened, it should follow that it can be done more cheaply with less power and therefore less cost. The demands made upon modern transportation seem to point to the other methods of using the weight gains. With rising labor costs and impatience with transportation delays most operators prefer to operate faster with larger loads.

While operators have been getting lighter trailers, they have been hitching them to more powerful tractors in

(TURN TO PAGE 134, PLEASE)



This Truck Engineering Corp. semi-trailer is designed to carry 12 ton concentrated loads such as transformers or machinery. The semi-trailer which weighs 8000 lb. has a loading space of 10 ft. between the drop and the wheel cut out. Total length of the trailer is 21 ft. It is constructed with a heavy under structure and has a 2 in. oak floor.



Licensed under U. S. Pat. No. 2,095,223
Canadian Pat. No. 370,548



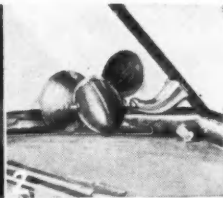
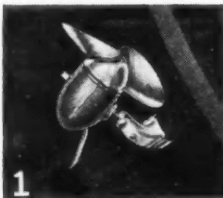
- 1 Steering post installation.
- 2 Attached to center post of divided windshield.

CLEAR VISION is still the first essential to safe driving!

The Fulton No. 496 defrosting and ventilating fan provides an economical, practical means for keeping the inside of the windshield and cab windows free of both FROST and STEAM. New, universal type curved bracket mounts in choice of four directions at any point where attached . . . on steering post, instrument cowl, header-board or on WINDSHIELD CENTER POST OR MOULDING on trucks where moulding may be loosened sufficiently to slip thin steel strap around it. The 6-inch fan (two soft-rubber, non-overlapping blades) moves large volume of air with greatest visibility both of instruments and road. Specially wound, ruggedly built 2-speed motor . . . 6- and 12-volt types. List prices: \$4.15 and \$4.65

And the Fulton Electric Sleet-Frost Shield is still the most efficient equipment ever devised for keeping both outside and inside of windshield clear of frost, steam, sleet and snow. No. 1-F3, illustrated, list price: \$2.75

Order from your jobber or write us direct if he cannot supply you.



No. 1-F3 — Glass Size 16" x 7"; 4 wires.

THE FULTON CO., Dept. CJ-11, Milwaukee, Wis.

A 3224-1/2

600,000 TOCCO-Hardened Crankshafts Make War on Wear



• More than 600,000 TOCCO-hardened crankshafts are in operation today in heavy-duty gasoline and Diesel engines. They are enabling operators to save hundreds of dollars in maintenance costs because TOCCO-hardened crankshafts give 5 to 10 times longer wear between crankshaft adjustments.

From bus and truck owners come astounding service records—100,000 to 200,000 miles with hardly enough crankshaft wear for the average shop to measure.

Little wonder that TOCCO-hardened crankshafts are now used by such well-known automotive manufacturers as Autocar, Cummins, Hercules, General Motors Truck & Coach, and White, to name but a few. TOCCO helps them help you deliver the goods—quickly, safely, and with greater operating economies.

If you are buying new trucks or buses, specify TOCCO-hardened crankshafts. Then you, too, will reap the benefits of TOCCO's scientific process of induction hardening that gives extra miles by the thousands.

Typical Cases of TOCCO's Resistance to Wear

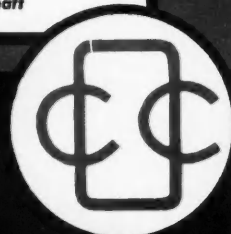
Heavy-Duty Cummins Diesel Engine:
After 229,941 miles of heavy hauling there was only .0025" average crankshaft wear without adjustment.

High-Speed White Super Power Engine: After 241,630 miles over desert and mountain roads the crankpin showed only .0004" wear.

Diamond-T Super-Service Engine:
After 100,000 miles TOCCO-hardened crankshaft did not reveal enough wear to shop measure.

Specify TOCCO—and eliminate a complete motor overhaul just to fix an "out-of-round" crankshaft

THE OHIO CRANKSHAFT COMPANY
CLEVELAND, OHIO



TRAILER PROGRESS

(CONTINUED FROM PAGE 132)

order to carry greater payloads on faster schedules.

The specific examples illustrated here provide a direct weight-saving comparison of old design with new design. Where old and new were produced by the same manufacturer, it is possible to compare them. Other comparisons are impossible without a great deal more information, show-

ing for what purpose the trailers were designed.

New Fifth Wheels

The American Steel Foundries has an-



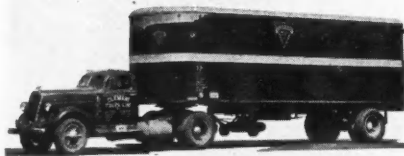
nounced a new series of tilting type Fifth

Wheels in 30 inch, 33 inch and 36 inch sizes. This series, together with their present line of oscillating and all purpose fifth wheels, is designed to make a complete line of fifth wheels.

The safety coupling devices and rubber cushioning remain the same, having proven their merits in years of service and thousands of miles of hauling.



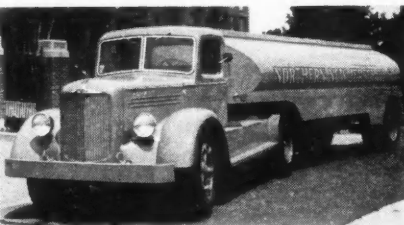
The older Grammm (top) semi-trailer is 26 ft. long 7 ft. high inside the body and 8 ft. wide. Equipped with 9.00-20 tires it weighed about 9200 lb. when it was built in 1935. The new DF-75 trailer recently delivered to St. Marys Packing Co., having the same dimensions and tires, is designed for a gross rating of 22,000 lb. With a special side door it weighs 8100 lb.



Edwards light-weight hi-tensile steel trailers like this one have overall width of 96 in.; inside height of 6 ft. 6 in. at side to 7 ft. at center and are furnished in any standard length. Capacities range from 16,000 to 26,000 lb.



The new Sears Roebuck trailer is a 24-ft. High-way Clipper which features an all-welded high tensile steel frame integrally fabricated with the all-steel body. The 20,000 lb. payload model weighs 6140 lb.



This new Mack semi-trailer recently put into service by the Northern New Jersey Oil Co. carries a 5750 gal. tank. Two electrically driven pumps are standard equipment.

**Now! A better
ROLLER BEARING
for Front Wheels,
Differentials
and Rear Axles**



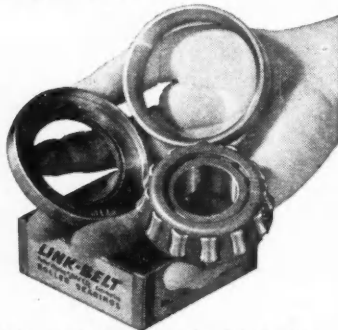
HERE'S THE BEARING REPLACEMENT YOU'VE ALWAYS NEEDED!

Designed to stand up longer under heavy service—to stay in perfect alignment under any combination of radial-thrust loads—that's why this Link-Belt roller bearing is certain to give greater efficiency. It's the ideal bearing replacement for front wheels, differentials and rear axles, because it assures increased bearing mileage and reduces operating costs. A trial installation will win your lasting confidence—ask your jobber about this better bearing today!

LINK-BELT COMPANY

519 N. Holmes Ave., Indianapolis, Ind.
Warehouses in all principal trading centers

Made by the makers of the famous Silverstreak Silent Timing Chain!



All inner bearings are furnished with GREASE SEAL. Wrapped in oil paper and packed in individual cartons.

LINK-BELT
SHAFTER
ROLLER BEARINGS

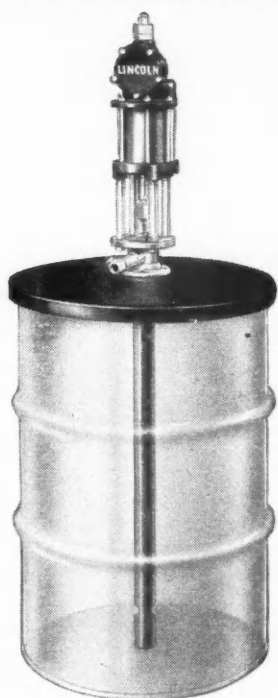
See our EXHIBIT at the A.S.I.S., Spaces B-159-61-63-65

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

LINCOLN LUBRICATING EQUIPMENT

**makes it easy
to turn out better jobs
in less time**



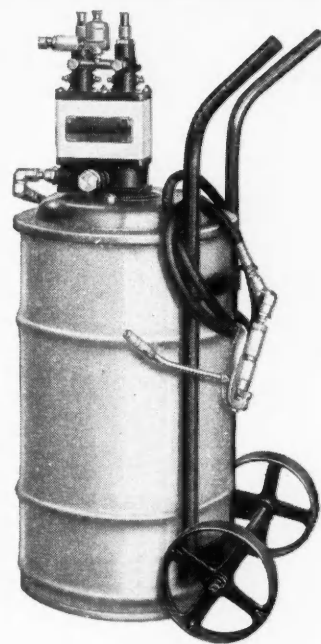
The Heavy-Duty Airline Lubrigun (shown at left) is specially suited for fleet lubrication service. Models are available for handling all types of chassis lubricants . . . All models are powered with 4" double acting air motor, and dispense direct from original 400-lb. or 55 gallon refinery drum.

HOW ABOUT YOUR FLEET? *Is your shop equipped to handle grease jobs quickly and economically?*

You can effect substantial economies and speed up oil and grease jobs with the aid of Lincoln Lubricating Equipment. Hundreds of fleet owners are cutting lubrication service and maintenance costs with this equipment—so why shouldn't *YOU*?

Lincoln makes a full line of equipment for dispensing lubricants from 400-lb., 100-lb., 50-lb., and 25-lb. original containers, as well as a complete series of hand and air-operated one pound guns. No matter what your service requirements, a Lincoln jobber can supply your needs.

Two typical units are described below, and the complete line of guns and dispensing units is covered by Lincoln Catalog No. 53.



(Model 346)

The Twin-Cylinder Chassis Lubrigun (shown at right) is for use with 100-lb. original refinery drums. Easily handles all types of chassis lubricants. Powered with two stage 2½" double acting air motors. Mounted on large wheel dolly for easy portability over rough surfaces.

For details on complete line, consult your nearest Lincoln jobber, or write us



LINCOLN ENGINEERING COMPANY

Pioneer Builders of Engineered Lubricating Equipment

ST. LOUIS, MO., U. S. A.

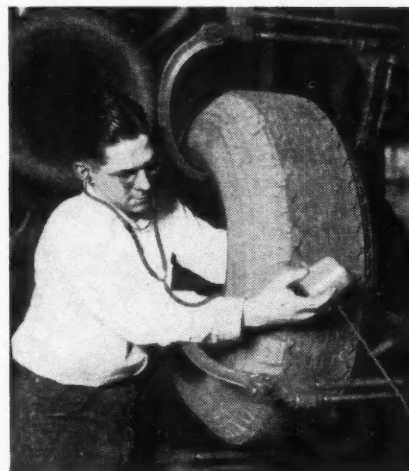
General Tire Introduces Kraft Plan for Uniform Retreading

Nation-wide uniformity in renewed tires—the same quality in Maine as in California, the same certified results in Florida as in Washington—has been made available through the development of the Kraft System of Tire Renewing, operated throughout the country by distributors of General tires.

The basis for this new renewing process is factory control—factory-approved equipment, factory-trained workmen, factory-specified methods, and factory laboratory inspection. The result is that a truck oper-

ator can buy renewed tires or have his worn casing renewed by the Kraft System anywhere in the country with the positive assurance that he is purchasing work done not merely according to the beliefs and the experience of a local workman, but performed exactly as the job would be done at the factory.

Never before has there been a dependable nation-wide guide for tire renewers. With more than 800 types and sizes of tread rubber available, it has been up to the individual recapper to order what he thought he should use. While many recapping plants have done good work in the past, the results on the whole inevitably have been haphazard.

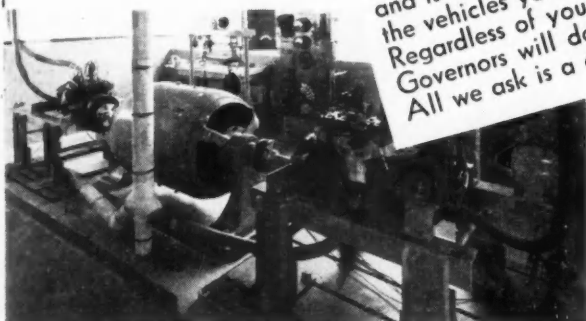


Inspectoscope enables operator to "hear" defects that might otherwise go unnoticed.

**"AND EVERY GOVERNOR IS
ENGINE TESTED AND CALIBRATED
ON THE DYNAMOMETER"**

*An exclusive Hoof feature
...accurate control guaranteed*

Yes, every Hoof Special Calibrated Governor is engine tested on the dynamometer for power, performance and accurate control before it leaves the factory. Conditions under which the governor will operate in actual service—so duplicated in our laboratories—there can be no question about the governor performing as it should... with no loss of power or acceleration. Another feature that provides additional savings is the pre-setting of Hoof Governors to road speed... at no extra cost... which does away with road testing. Hoof Governor performance and durability always have been outstanding... greatly enhanced in the new "streamlined" simplified compact model—with in-built positive spark control transfer. Smaller in size it makes an easier installation and is more adaptable than ever to the vehicles you operate. Regardless of your operation Hoof Governors will do the work better. All we ask is a chance to prove it.



One of the two Hoof Dynamometer and Testing Laboratories where every special calibrated governor is engine tested.

Star attractions

- ★ FACTORY SET... No road testing necessary.
- ★ STAINLESS STEEL PARTS... No corrosion or sticking.
- ★ CANTILEVER SPRING... No stretch or fatigue.
- ★ ALUMINUM BODY... No warping or distortion.
- ★ DIAPHRAGM CONTROL... No "cheating."
- ★ 3 BALL BEARING... No friction.
- ★ POSITIVE SPARK CONTROL
- ★ NO ACCELERATION LOSS
- ★ FULL POWER

With these conditions in mind, the Kraft System was developed to guide and help the recapper do a standard high quality job for his customers. Licenses to operate under the Kraft System have been granted exclusively to General Tire distributors throughout the country on the basis of their adherence to the factory's controlled methods and rigid standards.

In the first place, before a General distributor is licensed, his recapping equipment must meet the standards set by the factory. No outmoded, inaccurate equipment is acceptable.

Every operator, before he can renew a tire, is fully trained by the factory and must pass an examination to obtain his certificate as "Master Kraftsman." Every step in the operation is done according to factory specifications. Samples of the work done must be sent into the factory at 90-day intervals for laboratory inspection, and every 30 days a Kraft Specialist stops in to check the quality of the work.

It is through these controls that the nation-wide standardization of quality is obtained.

Together with these controlled methods, The Kraft System has developed new precision equipment to improve the quality of the renewing job.

One of these, known as the Inspectoscope, enables the operator to detect defects in the casing which would escape ordinary inspection only to appear later on the road in the form of sudden tire failures.

With the Kraft Balancer the operator can accurately balance the tire, eliminating the possibility of mileage-killing irregular wear which heretofore has frequently occurred on out-of-balance recaps.

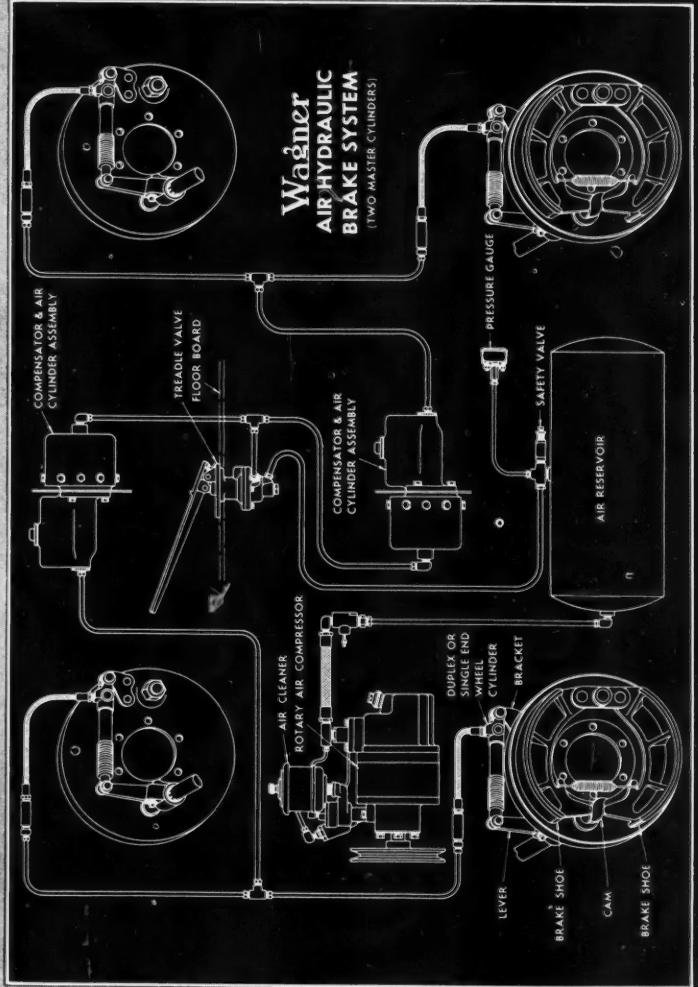
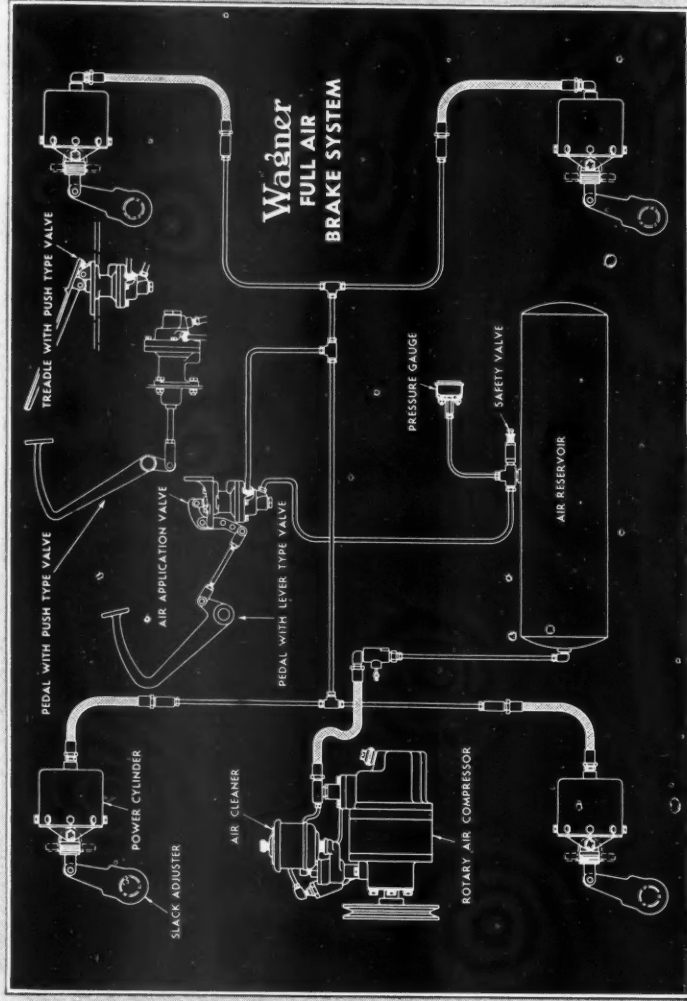
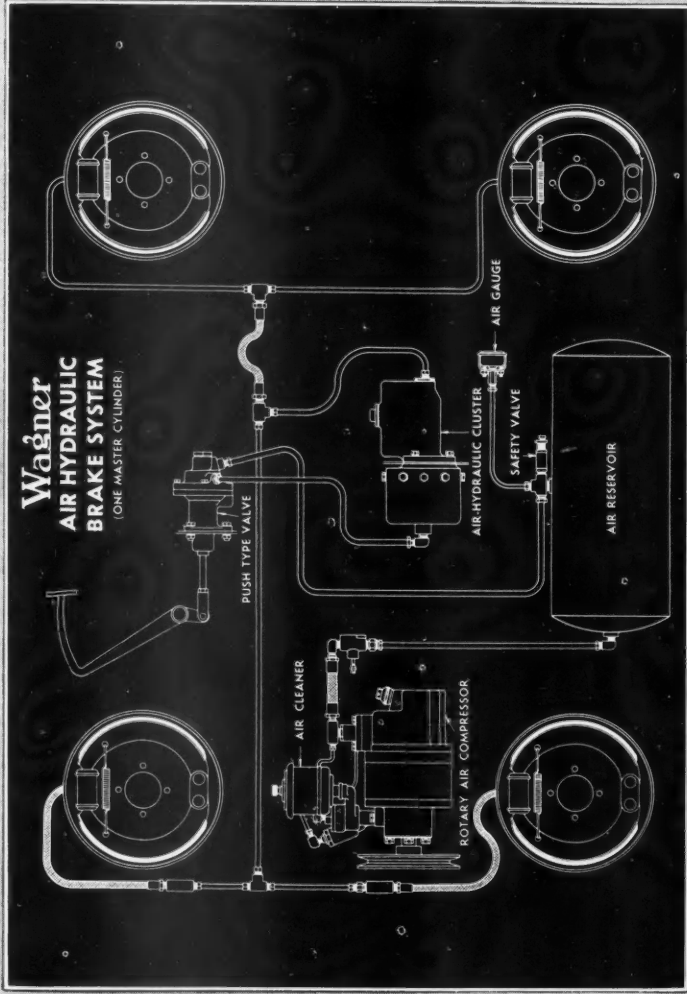
A special curing gauge accurately measures the toughness of the finished tread rubber.

What this means to the trucker anywhere in the country, is that now he can have the worn casings in his fleet renewed with positive assurance that the tires are brought up to the original factory standard of tread thickness, toughness and correct balance of tread and body. He can be sure that no bad casings will be renewed.

SEND FOR YOUR COPY OF "QUESTIONS AND ANSWERS"

HOOF PRODUCTS CO., . . . 6543 S. Laramie Ave., CHICAGO, ILL.

Makers of the FAMOUS HOOF CANTILEVER GOVERNORS.



THERE ARE THREE WAGNER AIR BRAKE SYSTEMS

As illustrated in the blue print reproductions, there are three distinct Wagner Air Brake Systems. Each system is designed to meet a specific requirement. Wagner Air Brakes are relatively simple in construction and are easily and quickly installed—In fact, you do not even have to disturb the present hydraulic braking system to get full air power. Our engineers will welcome the opportunity to be of service to you and the coupon below will bring complete information.



GET COMPLETE INFORMATION TODAY!

K40-5A
CCJ

AUTOMOTIVE EQUIPMENT DIVISION

Wagner Electric Corporation

6400 PLYMOUTH AVENUE
ST. LOUIS, MO.

Gentlemen: Please send me complete information on Wagner Air Brakes. We are

Interested in:

- ☐ Wagner Full Air Brake System
- ☐ Wagner Air Hydraulic (single master cylinder) Brake System
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FIRM _____

COLD COMFORT

(CONTINUED FROM PAGE 53)

maintain temperatures in large bodies as low as 30 deg. Principal advantage: low initial cost.

3. *Solid Carbon Dioxide.* Modern systems usually use this refrigerant in separately insulated compartment designed to reduce melting. Blower is sometimes employed to circulate air over bunker, auxiliary cooling chamber or through coils filled with

secondary, liquid refrigerant. Separate power systems are sometimes furnished to supply current for the blower. Thermostatic control is possible. Older systems used bunkers only with cold air currents deflected by large aluminum plates. Can maintain temperatures for limited time as low as zero in any size body. Principal advantages: light weight, low initial cost.

4. *Mechanical Systems.* Offered in a great variety of types but all must have (1) a condensing or power

unit consisting of power source, compressor, condenser, usually a liquid receiver (or expansion tank) and necessary controls usually mounted outside the body, and (2) an evaporator (cooling coil) with or without fan, or hold-over plates (see descriptions of Kold-Hold and Dole plates, below) mounted inside the body and used to transmit the refrigerant to the inside.

Power source may consist of single or multi-cylinder gasoline engine, mechanical power take-off, electric motor operated from power take-off generator and/or plugged into garage circuit, or single-cylinder propane engine burning propane refrigerant as fuel. When hold-over plates are used, condensing unit may be dispensed with in lieu of central ammonia plant in garage for charging plates. Principal advantages: controlled temperatures in any range from 70 to zero, indefinite time of operation (self-contained power units only), low operating cost, and low overall weight.

Now before we describe the individual refrigeration systems, let us consider briefly the question—"Where does truck refrigeration go from here?"

With the advent of more perfected bodies and refrigerating systems came a natural growth in the scope of refrigerated services, particularly in the higher (and therefore easier to maintain) temperatures. Dairies, meat packers, confectioners, even florists and bakers found that their products were greatly benefited by refrigerated deliveries. Fresh products could now be trucked over long distances in competition with railroad service. Today, one manufacturer estimates that there are upwards of 100,000 trucks in the meat packing business alone and that about one-half are insulated. Only about 25 per cent of the total, according to this manufacturer, are refrigerated by one means or another, yet it is known that meats both fresh and cured are subject to rapid deterioration in high temperatures.

In the low temperature bracket, 15 deg. and under the ice cream industry is still the leader, having been almost solely responsible for the development of this type of refrigeration.

But now a new star looms on the refrigeration horizon in the form of quick-frozen foods. New opportunities (TURN TO PAGE 142, PLEASE)



GATKE CUSTOM-BILT Brake Blocks and Brake Lining Sets are furnished for every make, year and model of truck, tractor, trailer, bus, taxicab and passenger car.

Proved in nation-wide service on every type of fleet doing every kind of job.

Ask your GATKE Jobber or write us for recommendations.

Performance is the answer. Positive, quick-stopping, quiet operation. Uniform holding power at all service temperatures. Prolongs drum life. Longer service with fewer adjustments. Reduced maintenance expense.

These are a few of the many time-and money-saving features proved in actual service.

You'll be agreeably surprised at the advantages GATKE CUSTOM-BILT Brake Blocks can give you. Just use them on your next five relines — compare results with your best records and see the difference.

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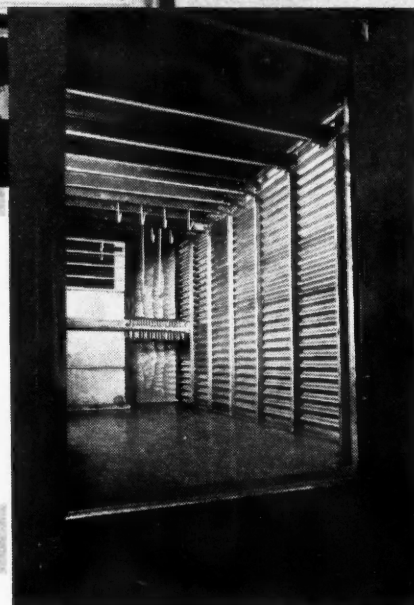
GATKE CORPORATION 228 N. La Salle St., CHICAGO, ILL.

Introduced Moulded Brake Blocks for Automotive Service



LEFT: Armour & Company operate 26 refrigerated truck bodies constructed of Alcoa Aluminum Alloys; more are on order. Size is 11', 9½" x 6', 3½" x 6' 6". Each weighs 9450 lb., including spare tires, racks, rails, cooling units with full charge of gas.

BELOW: Interior of body. Note 1-piece floor pan.



Field Report on: **THE TRUCKS THAT BRING YOU THE BACON**

They are the trucks with bodies built of Alcoa Aluminum Alloys.

In the typical case of refrigerated bodies used by Armour & Company, three typical results make Aluminum the best bet:

Armour gets *operating economies*. The Aluminum bodies with accessories weigh 1400 lb. less than the units they replace, and the lighter load can mean less expense for gasoline, oil, tires, and mechanical upkeep.

In *maintenance*, Aluminum makes it easier to keep the paint attractive, and minimizes the problem caused by moisture in insulated construction.

The fact that Aluminum is "*Friendly to Food*," always easy to keep bright and sanitary, always safe in contact with food, is a third important consideration.

Armour's operation demonstrates one way to take full advantage of lightness, and of Aluminum; you take savings on operation and maintenance. Another way is to carry extra payload, a "Bonus Load," in place of the dead weight removed. Either way, it's worth talking over with a progressive body builder. ALUMINUM COMPANY OF AMERICA, 2139 Gulf Building, Pittsburgh, Pennsylvania.

FOR BONUS LOAD

WITH STRENGTH AND SAFETY

ALCOA  ALUMINUM

Reg. U. S. Pat. Off.

(CONTINUED FROM PAGE 140)

ties are being opened up to truckers in the hauling of this profitable commodity over longer and longer distances. Now that controlled zero temperatures are a reality, these frozen products can travel unmolested by even the desert sun. No commodity offers the truck operator a better chance to capitalize on the greater flexibility of his equipment over other forms of transportation.

Operators whose trucks are equipped with powerful self-con-

tained refrigerating mechanisms are constantly opening new markets for their wares. One fleetman, for instance, is currently loading live lobsters on the Eastern seaboard at sea water temperature. Two days later they are delivered to mid-Western consumers in frozen or semi-frozen condition with scarcely the loss of a single claw.

In a nut shell, modern refrigeration-minded fleetmen are making use of the improvement in refrigerating technique in three important ways.

First, they are using it in *high temperature* ranges to better serve an increasing number of industries such as meat packers, dairies, bakeries, florists and confectioners. Second, they are using it in the *low temperature* range to develop new business in the transportation of quick-frozen foods and other specialized services. Third, and far from least, they are using it to do the job that older refrigerating equipment was supposed to do but did not do.

Now for a look at the highspots of various types of commercial systems currently offered by leading manufacturers:

Baker Mechanical Unit

(See Fig. 1, Page 50)

Baker Ice Machine Co., Inc., Omaha, Neb., has laid its stakes in the truck refrigeration business on a self-powered, self-contained mechanical plant of unusually large capacity. In a recent booklet, "Desert Sun Eclipsed," the company tells of an operation that hauls as much as 30,000 tons of butter on a single load across the Mojave Desert with outside temperatures as high as 115 deg., while inside temperature is maintained at zero.

The power plant of the unit, usually mounted in a separate body compartment, consists of a 4-cyl. air-cooled engine, a 2-cyl. Baker compressor, condenser with propeller type fan, liquid receiver, direct current generator and storage battery (used for starting engine and driving blower motor), and a control panel for automatic operation. Weight of this unit is 1100 lb.

The cooling unit consists of a galvanized steel box which houses one or two coils of copper tubing (depending on capacity desired) and a large centrifugal-type blower, driven usually by electric motor using current from the generator on the power unit. Refrigerant, of course, is pumped from the compressor through the coils of the cooling unit. The unit may be mounted either on the floor or suspended from the roof and in either event provides ample circulation for cooling the entire body. This unit including motor weighs 270 to 500 lb. depending on size.

Operation of the Baker system is completely automatic and flexible for any temperature desired between zero and 55 deg. When the engine is started the blower on the cooling coil inside the body operates simultaneously.

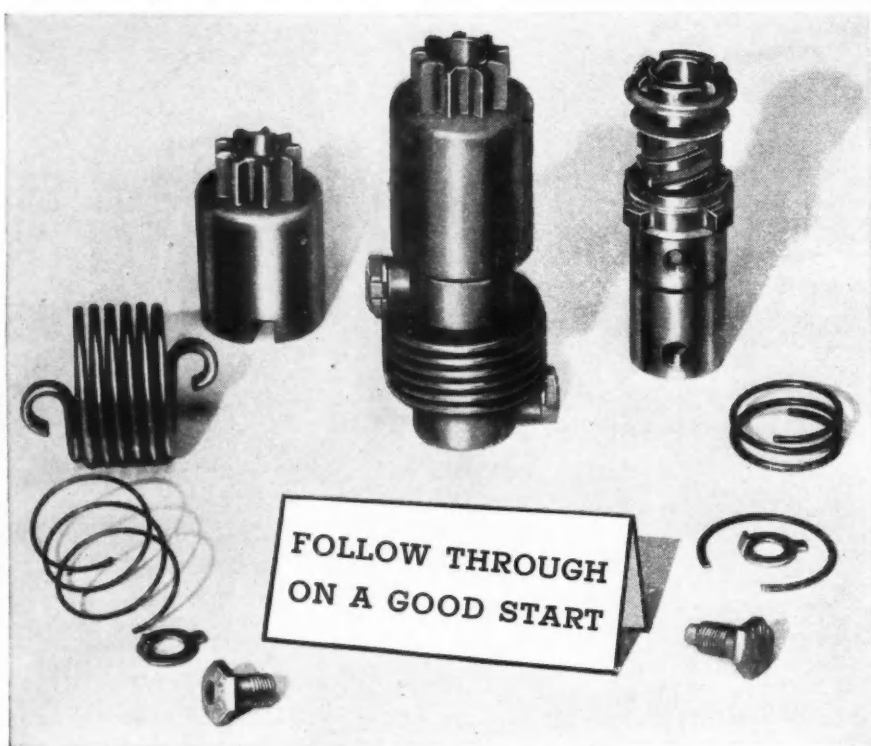
Baker Ice Machine Co. also offers a line of standard condensing units powered by electric motors for plug-in service or for dual operation from alternating or direct current (the latter from power take-off).

Carrier Gasoline-Powered Units

(See Fig. 2 & Fig. 3, Pages 50, 51)

The Carrier Corp., Syracuse, N. Y., is concentrating its efforts in the truck refrigeration field on a self-powered, self-contained mechanical refrigerating unit which may be used in conjunction with

(TURN TO PAGE 144, PLEASE)



Use genuine Bendix Drive Parts for top performance of the *Bendix Drive*

Proved beyond any question of a doubt by 25 years of faithful service and billions of effortless starts is the superior dependability of the Bendix Drive. Truck and car owners the world over take this dependability for granted.

That's why it is so important that *only* genuine Bendix Parts be used on the Bendix Drive. For only genuine Bendix Parts made by Bendix

to the precise steel formula, tension, temper, shape and dimensions will renew the top performance of the Bendix Drive.

For your protection the name Bendix is stamped into every genuine part. Maintain the unequalled simple, foolproof, automatic performance of the genuine Bendix Drive in insisting upon only genuine Bendix Drive Parts.

ECLIPSE MACHINE DIVISION ★ BENDIX AVIATION CORPORATION
Elmira, New York



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FOR ORRVILLE

THE Orrville Body Company will tell you that they specify Plexite Safety Glass because it's *safer* and *clearer*. Plexite is *safer* because it is the most flexible of all safety glass—gives like a net under impact—yet provides increased resistance to penetration. Plexite is *clearer* because of its unique crystal clear binder, because it cannot blotch or discolor and when made with the new improved Lustraglass is almost entirely free from distortion . . . In addition to all these advantages Plexite offers important sound-deadening advantages . . . There is no substitute for Plexite, the *original* flexible safety glass. Write for complete data on this amazing product.

AMERICAN WINDOW GLASS COMPANY, PITTSBURGH, PA.

PLEXITE

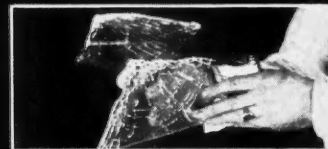
THE SAFER SAFETY GLASS

COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

When writing to advertisers please mention Commercial Car Journal



When a sack of shot equal to the weight of a man's head is dropped on Plexite, Plexite yields and cushions the blow.



Rigid safety glass tested with the same sack of shot dropped from the same height shows a solid, jagged break.

(CONTINUED FROM PAGE 142)

any standard hold-over plates or coils inside the body.

The unit is powered by a 61-cu-in. 4-cyl. Waukesha engine directly coupled to a Carrier compressor which is supplied in varying sizes to meet any capacity need. A large capacity disc-type fan is mounted on the front of the crankshaft and draws air through both engine radiator and condenser mounted in tandem. Mounting may be made at any suitable place either under or inside the body. Weight of the entire plant ranges between 420 and 485 lb. An automatic control by thermostat mounted

inside the body is usually furnished and provides completely automatic operation.

Advantage of this type of system is the fact that it is wholly independent of external power sources and also of whether the truck is in motion or stopped. Many operators maintain low temperatures always by leaving the units permanently connected. Only gasoline need be added.

Interesting also are the possibilities of refrigerating two sections of a truck or trailer to different temperatures. One large eastern operator, hauling both quick frozen foods and merchandise with less severe temperature demands in the same trailers keeps one compartment at zero the other

at 30, 40, 50 or 60 deg., depending upon the particular demand. The same refrigeration plant supplies both compartments separately controlled by individual thermostats.

Curtis Condensing Units & Fan Type Unit Coolers

(See Fig. 6, Page 51)

Curtis Refrigerating Machine Co., a division of the Curtis Mfg. Co., St. Louis, offers a complete truck-mounted condensing unit, available with three different sources of power, and a fan-type unit cooler.

Of particular interest is the unusual unit cooler for use inside the body. In appearance it is not unlike the familiar unit heaters seen in many modern garages. Instead of the heater's radiator, the cooler has a fin-type cooling coil or evaporator. Just behind this is a powerful fan and the whole assembly is enclosed in a convenient case. A drip pan is included to carry off moisture and because of its wide front flange also serves to deflect cool air upward against the natural gravity trend.

Curtis condensing units available in a variety of sizes are mounted on a sub frame and are furnished complete with compressor, condenser, liquid retainer, all necessary controls and a suitable power supply. Power offered is a small one-cylinder gasoline engine, a 110 or 220-volt electric motor for plug-in service or with a Century dual-wound motor for use with the Century electric generator set. The latter type operates either on direct current from the power-take-off-generator or from alternating current at the garage, thus supplying a virtually constant power supply.

The Curtis condensing units may be used either in conjunction with Curtis unit-type fan coolers, with large evaporating coils depending on gravity, air circulation or with standard hold-over plates, the latter being the only practical type when only a plug-in power source is furnished.

Frigidaire Condensing Unit

A complete truck condensing unit for refrigerating or charging hold-over plates of all kinds is offered in four sizes by the Frigidaire Division of General Motors Sales Corp. Capacities range from 1/2 to 1 1/2 hp.

The Frigidaire units are especially constructed for the rough usage of truck service. Each is mounted on a sturdy channel-steel base and consists of a Frigidaire 2-cyl. reciprocating compressor, a "quick-cool" radiator type condenser, a large liquid receiver, a 110 or 220-volt motor and all necessary valves and automatic controls. V-belt drive is used. Special equipment can be furnished for use with mechanical power take-off or generator sets.

Net weights of the complete units range from 185 to 320 lb. depending on capacity. Overall dimensions of the biggest unit are 26 1/2 in. long, 22 1/4 in. wide and 22 in. high.

Frigidaire also offers a wide selection of larger compressors for central plant units capable of charging any number of hold-over plates in the truck fleet.

(TURN TO PAGE 146, PLEASE)



It Pays

-to be Sure Your Foglites are SAFE



NEW! A Glaseal Beam Foglite
—Chrome-plated body has malleable iron bracket and locking device that protects against pilferage. Contains genuine G-E all-glass unit that cannot dim with age. Special construction accommodates any Glaseal Beam unit regardless of thickness. 6 1/2" in diameter. Supplied with plastic rotary switch, 10 feet of wire. White or amber lens. No. 600, list \$5.00. Black enameled body. List \$4.40.



The Do-Ray Sealed Beam Headlight!
Replaces old truck and passenger lamps with ball socket mounting. Heavy construction, genuine sealed beam, double filament unit. List \$15.00 pr. (Also 12-16 V for Diesel trucks.)



The "Grand" Foglite, No. 1000. Heavy chromium plated, prismatic lens. Heavy malleable iron bracket fits double bumpers. Illuminated switch. White or amber lens. List \$5.00.



Extension Foglite Bracket, No. 603. Raises foglite 4" above normal to clear high grille guards. Heavy malleable iron bolt. For practically any make fog lamp. List 75c.

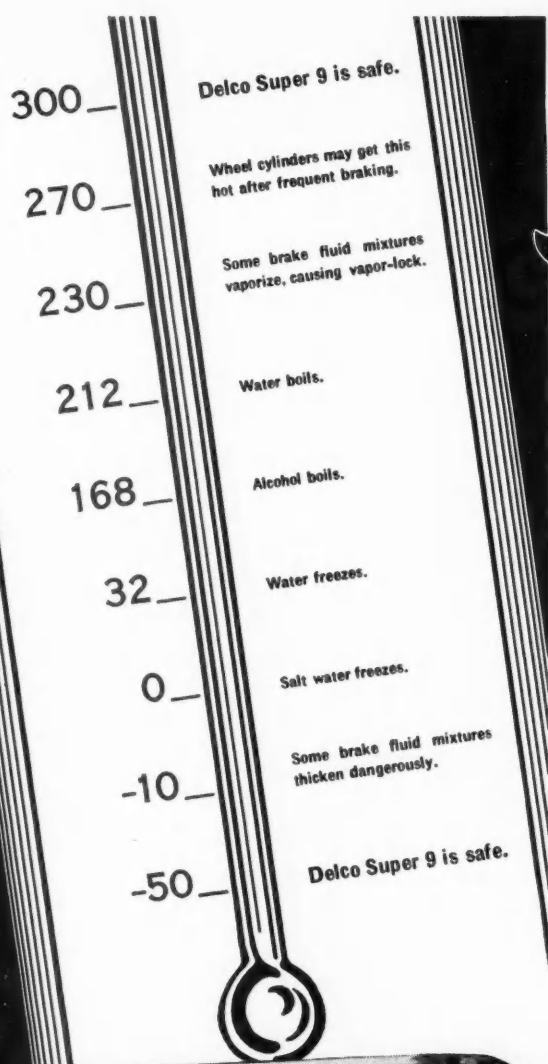
Ask Your Jobber

DO-RAY LAMP CO., 1458 S. Michigan Ave., CHICAGO

DO-RAY

SAFETY LIGHTING AND REFLECTING DEVICES





CONTENTS ONE QUART

Genuine
Delco
HYDRAULIC BRAKE
FLUID

UNIVERSAL
READ SUPER 9 READ
ALL WEATHER

DELCO BRAKE DIVISION
OF GENERAL MOTORS CORPORATION
DAYTON, OHIO
MADE IN U.S.A.

Safe—

ALL THE WAY DELCO SUPER 9 Hydraulic Brake Fluid

From 50° below zero to 300° above, this chemically-processed brake fluid is fully effective—safe. When wheel cylinders heat up from repeated braking—270° is not uncommon—Delco Super 9 safeguards the hydraulic system against vapor-lock and its possible result, “no brakes.” In cold weather, Delco Super 9 keeps its effective mobility even at 50° below zero to protect brake lines from the danger of “freezing up.”

This double protection is especially important in bus and truck operations, where heavy braking is called for and where schedules must be maintained in the coldest winter weather. Delco Super 9 is original equipment in all General Motors trucks, buses and cars; it works equally well in any hydraulic system—mixes readily with other brake fluids. Standardize on Delco Super 9.

DELCO SUPER 9 MEETS EVERY REQUIREMENT

1. Safe and fully effective under extreme heat conditions—300°.
2. Extra margin of safety in cold weather—as low as 50° below zero.
3. Chemically stable—will not break down and form gum deposits.
4. No harmful effect on rubber—will not cause swelling of cups.
5. Safe for all metal parts—no corrosive action.
6. Provides efficient lubrication of working parts.
7. Efficiency proved in large fleets of trucks and buses.
8. Mixes readily with other fluids.
9. Competitively priced.

CLEANSE SYSTEM WITH DECLENE FLUSHING FLUID

Before refilling with Delco Super 9, use Declene to flush out questionable, broken-down brake fluid, gum deposits and dirt. A clean hydraulic system is important to safe fleet operations.



Delco Super 9, Declene and Delco Brake replacement parts are distributed by United Motors Service and Bendix distributors.



Delco

BRAKE DIVISION

GENERAL MOTORS CORPORATION DAYTON, OHIO

STANDARD FOR EQUIPMENT—THE STANDARD FOR REPLACEMENT

(CONTINUED FROM PAGE 144)

**General Electric Body
& Refrigerating Equipment**

(See Fig. 12 & Fig. 13, Page 53)

General Electric Co., through its transportation department at Erie, Pa., offers a completely "packaged" refrigerated truck body primarily suited for ice cream delivery. According to the normal G-E merchandising plan the body is installed on customer's chassis at the Erie plant complete with all necessary equipment including the body itself, insulation, hold-over plates, any of several types of power-operated refrigerating mechanisms, a rear

bumper and necessary running lights.

The standard G-E body is offered in one size which holds up to 900 gal. of ice cream. It weighs from 3450 to 3800 lb. (depending on type of refrigeration) and fits virtually any standard truck chassis with nominal rating of 1½ to 2 tons with CA dimensions from 83 to 88 in. The body is divided into two separately insulated sections which may be separately controlled, if desired, making it possible to keep one section refrigerated and the other not refrigerated for empty cans or even refrigerated to higher temperatures (with special equipment).

Insulation is provided by 6 in. of glass wool in the floor, 6 in. of Thermocraft in

the walls and 8 in. of glass wool in the roof.

Three types of refrigeration are available as follows:

1. *Automatic with Partial Hold-over.* This system uses relatively small hold-over plates in the roof of the body refrigerated by mechanical equipment mounted below the body. The G-E compressor is powered by a power take-off when the truck is in motion and by electric motor plugged into a power line when the truck is not in service. An unusual feature of the system is the G-E magnetic clutch in the power take-off line which automatically disengages when refrigeration is not needed or when the truck gears are being shifted (eliminating drag from the compressor). The clutch weighs 30 lb. and is actuated by electricity from the truck system drawing only 3 amp. at 6 volts. This system is indefinitely self-powered provided the truck is in motion an average 11½ miles for each hour that the truck is out. The hold-over capacity is sufficient to hold down temperatures during lay-overs up to four hours provided the stop is followed by an extended run, or a plug-in stop.

2. *Automatic with Full Hold-over.* This type uses larger hold-over plates capable of holding temperatures to the desired degree for a full working day. The truck again is equipped with compressor and condenser but the only power supply is the electric motor which is plugged into the power line at night. Primarily adaptable to dense urban deliveries, but may be used on extended runs provided a lay-over at night is scheduled.

3. *Straight Hold-over.* This type has hold-over plates only with ample capacity for the day's run. At night the truck must return to the home garage where special fittings are available to connect the plates to a central cooling plant using ammonia or other refrigerant. This type is, of course, dependent on availability of the central plant and is best suited for large fleets where complete standardization is practical.

Kelvinator Condensing Units

A line of condensing or power units for truck refrigeration, complete with Kelvinator compressors and condensers and a standard electric motor for plug-in service is available from the Kelvinator Division of Nash-Kelvinator Corp., Detroit, Mich. Details of the equipment, however, were not available at this writing.

Mobile Refrigeration

(See Fig. 7, Page 50)

A modified mechanical refrigerating system which uses a non-toxic hydrocarbon (usually propane) as both refrigerant and fuel for its internal combustion engine is offered by Mobile Refrigeration, Inc., 10 Rockefeller Plaza, N. Y.

A specially-designed compressor, a 4-cycle single-cylinder engine and a condenser are arranged in the conventional manner to form the power unit. In addition an electric motor is usually furnished together with an automatic dual drive arrangement so that the unit may be operated

(TURN TO PAGE 148, PLEASE)

Let 'em Roll . . . SAFELY!

AMERICAN SAFETY TANKS

DO Prevent Truck Fires!!

Protect Your Driver . . . Your Load . . . Your Outfit



St. Louis, Mo.
July 23, 1940.

"Our company has been using your safety tanks for quite a number of years and we do not hesitate to recommend them highly.

"We have had a few wrecks in which an inferior tank could have caused a considerable loss, however, we have never had a fire on account of your tanks giving away at such time."

J. R. Brashear, President
BRASHEAR FREIGHT LINES

Ask the Men Who Use Them!



American Safety Tank Co.

PROTECTION
AGAINST TRUCK FIRES FOR DRIVER, LOAD AND OUTFIT

Underwriters Laboratories, AU1302
KANSAS CITY, MISSOURI, U.S.A.

Cut Chain Costs by more than *Doubling* **SAFE Mileage**

● The same feature that makes WEED Americans wear more than twice as long also makes them the *safer* chains. That is the double-welded Bar-Reinforcement. It provides twice the metal to wear through—and grips the road *three ways*, stopping forward, back and side skids.

WEED Americans are made of "Weedalloy"—a tough, wear-resisting metal especially developed for WEED tire chains. Side chain links are welded and hardened to take the punishment of curbs and ruts. Patented Lever-Lock End Hooks make WEED Americans easy to put on and remove.

Standardize on WEED American Bar-Reinforced Tire Chains and save on tire chain costs.

AMERICAN CHAIN & CABLE COMPANY, Inc.
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Bar-Reinforced
WEED Americans
give you more than
TWICE the
mileage

... and we'll
show you how
to add **25%**
to that

SEND FOR **FREE CHART**

25% to 50% can be added to chain mileage by proper installation. Send for free chart that shows how to apply chains so that all cross chains get equal wear.

*In Business
for Your
Safety*



WEED

WEED American *Bar-Reinforced* TIRE CHAINS

(CONTINUED FROM PAGE 146)
ated from the house circuit when not on the road.

The most unusual feature of the system, however, is the fact that the propane refrigerant, instead of being sealed into the system, is stored in a pressure tank below the body, fed into the system as needed, and then consumed as fuel by the engine. Experience has shown that the system in continuous operation consumes about 1 lb. of bottled gas per hour at an average cost of 5 cents.

Inside the body is mounted a large evaporator or cooling coil again following conventional design. In addition there is

a thermostatic control valve (which automatically stops and starts the system), a charge control valve and a fuel take-off valve to supply the engine. Propane not consumed by the engine is routed back into the system and when the electric motor is being used for power the system is sealed in conventional manner, by automatic valving.

The propane fuel is delivered to the engine in gaseous form and is said to be remarkably free from carbon forming and oil diluting properties.

The largest model which serves the largest trucks and trailers weighs about 650 lb. complete. The engine is a special

Briggs and Stratton 5-hp. model and the special compressor is made by Brunner. The electric motor in the dual drive model is a standard Westinghouse and when a starter generator is used a special Leece-Neville unit is incorporated.

Williams Ice-O-Matic

(See Fig. 5, Page 50)

A complete mechanical truck refrigeration system using a gasoline-powered compressor unit and fin-type gravity cooling coils mounted along the upper walls of the body is offered by the Ice-O-Matic Division of Williams Oil-O-Matic Heating Corporation, Bloomington, Ill.

The power unit, normally mounted under the truck body, is enclosed in a protective housing with louvers opposite the condenser coils and a hinged door for quick accessibility to the mechanisms. The Williams Ice-O-Matic compressor is driven by a 5 hp. Briggs & Stratton single-cylinder engine, said to have ample power and low fuel consumption.

The fin-type coils mounted inside the truck body, either on the upper sides or on the roof carry the refrigerant to the body. Air circulation is maintained by gravity and is said to be ample for all occasions. A baffle is provided on the outside of the coils (when side mounted) to direct air currents over the coils, and a drip pan under each coil carries normal condensation overboard protecting the truck body from any moisture.

There is a simple mechanical device which regulates the flow of refrigerant automatically in accordance with the need. In addition, there are separate manually operated valves for each coil which can be used to control refrigeration according to requirements and also permit the ready removal of coils when not needed without interfering with the mechanical unit. Outstanding features claimed for the Williams-Ice-O-Matic system are the extreme ruggedness of the compressor mechanism, the absence of complicated electrical controls and the simplicity of the cooling coils that require no blower.

One large operator operating between Chicago and Omaha formerly used a shop-made circulating brine system for cooling his loads. The trip required from 1000 to 1500 lb. of ice and 3 to 4 gal. of gasoline to operate the pump and blower. With his new Williams Ice-O-Matic installation he reports a gasoline consumption of 5 to 7 gal. which is his total operating expense. In addition he gets much more accurately controlled temperatures.

The company also offers compressor equipment for a great variety of truck installations, using hold-over plates or blower-type cooling units as well as the gravity coils. Compressors may be powered by gasoline engines, by power take offs, or by electric motors with plug-in attachments. Larger compressors for central installation capable of charging a number of truck hold-over plates are also available.

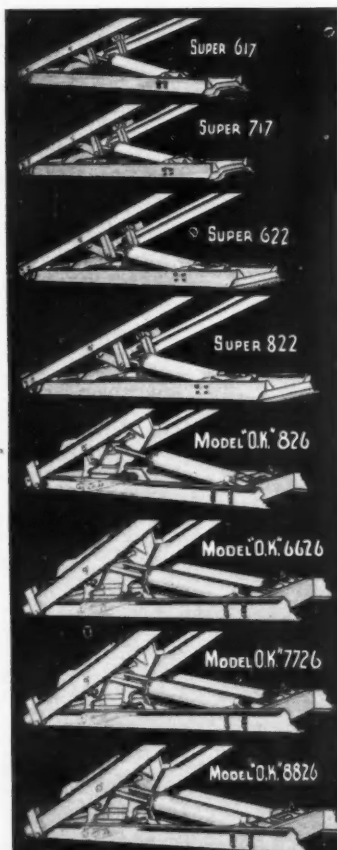
Dole Hold-over Plates

(See Fig. 11, Page 52)

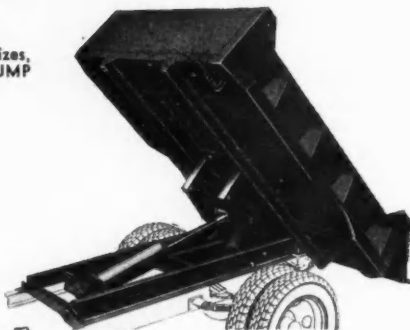
A complete line of hold-over plates in a variety of sizes and two thicknesses is of (TURN TO PAGE 150, PLEASE)

The ANTHONY LINE of Hydraulic SUPER HOISTS *Built to fit Any Job*

Anthony furnishes over 2500 types, models, sizes, shapes and capacities of HYDRAULIC HOIST DUMP BODIES to meet all dump truck requirements.



ANTHONY CO...STREATOR, ILL.



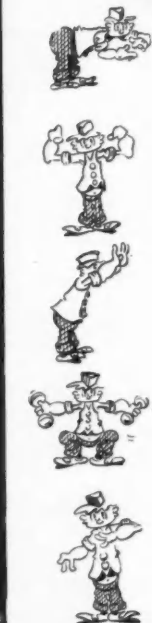
Anthony Equipment Provides—
Lowest Loading Height! Faster,
Easier, Safer Loading—hand or machine.

Double Arm "Power-Speed" Lift—
Tremendous Power; Longer Life.

Arms lift vertically to load from start
to finish. No horizontal hinge thrust.

Formed Steel Lift Members — in-
creased strength, reduces "dead
weight."

Full Tire and Dumping Clearance.



LOWER IN COST PER MILE BECAUSE HIGHER IN MPR*



THERE'S MORE
MPR*
(*Miles Per Replacement)
IN PACKARD CABLE

HOW PACKARD CABLE SAVES YOU MONEY

There's money to be saved in your operations, if you haven't already standardized on Packard cable for your wiring replacements.

Records of many leading fleet operators supply the proof of this. They show that Packard cable lasts longer—gives more MPR—eliminates as many as one out of every three replacements. And just as surely as one end of a seesaw goes down when the other end goes up, your per-mile operating cost is lowered when your mileage per wiring replacement is raised. Packard cable's higher MPR saves you real money by substantial economies in labor hours and lay-up time—by greater protection against possible causes of costly breakdowns.

Why does Packard cable deliver more MPR? One important reason is the fact that this year Packard is celebrating its 40th year of specialization in the making of automotive cable—its 50th anniversary as a manufacturing organization. There's no substitute for the "know how" and continuous improvement that these years have brought. Then, too, years upon years of Packard leadership in volume production of automotive cable have made possible unmatched research and manufacturing

facilities. These have brought progress that keeps Packard cable at the top in quality and value—*quality that has resulted in the present demand for more than 2,500,000 feet of Packard cable daily.*

Packard cable is available in types and sizes to meet every automotive requirement. Your Packard jobber is equipped to specify the Packard cable best suited to your needs—to save you money with more MPR. It will pay you to consult him today.



Make sure that each of your mechanics has his copy of the Packard Certified Rewiring Manual, "Copper Nerves," with its valuable information about increasing the efficiency of automotive electrical systems. Available gratis. Write to Packard Electric Division, General Motors Corporation, Warren, Ohio.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

THE STANDARD WIRING EQUIPMENT OF THE AUTOMOTIVE INDUSTRY

(CONTINUED FROM PAGE 148)

ferred by the Dole Refrigerating Co., 5910 No. Pulaski Road, Chicago. Each of the Dole plates is actually a thin metal tank filled with a eutectic solution with melting point of either minus 6 or plus 18 deg., depending on the degree of refrigeration desired.

Three-quarter-inch copper tubing in the ratio of six lineal feet per square foot of plate surface is arranged inside the plate to carry the refrigerant from the compressor whether it be mounted on the truck or a part of a central station.

Standard Dole plates are available in either 1 in. or 2½ in. thicknesses, the for-

mer being used where a quick "charge" or freeze is desired, the latter where slower charge but greater holding time is required. A combination of both is possible to accomplish a degree of both objectives. Tanks may be suspended from the roof or sides of the body or may be mounted vertically at intervals suitable to specific loads. Size range plus the availability of any desired combination or number of plates gives great flexibility of cooling capacity.

Dole offers a complete line of fittings including mounting brackets, hand and thermostatic valves, heat exchangers, etc., for both methyl chloride or Freon refrigerants,

which are used with truck mounted compressors, and ammonia refrigerant common to central plants.

Kold-Hold Plates & Refrigerating System

(See Fig. 10, Page 52)

A large number of the mechanical refrigerating systems in use today use hold-over plates in any of various forms as the final means of conveying the refrigerant to the inside of the body and also to retain the refrigerant's cooling effect when the mechanical system is not functioning. Kold-Hold Mfg. Co., 249 Mill St., Lansing, Mich., supplies this vital part in a great variety of shapes, sizes and capacities to meet virtually every need.

The actual plate is essentially a steel or aluminum tank (the latter, lighter but more expensive) filled with an eutectic solution—technically a solution with the lowest possible boiling point. Inside the tank and amid the solution is a coil of pipe directly connected to the refrigerating mechanism or source, which carries the refrigerant to the tank which in turn freezes the solution. This in effect provides a solid mass of cold (with a melting point usually considerably below natural ice) that is capable of absorbing heat from the body so long as at least part of the solution remains frozen.

This hold-over period may extend for many hours.

In addition to being available in different sizes and shapes to meet various needs, the plates are also available with solutions having various melting points. Standard solutions offered by Kold-Hold have melting points of -8 deg., plus 18 deg. and plus 28 deg. depending on the amount of refrigeration required. In each case body temperatures may be maintained from close to the melting point of the solution to about 30 deg. above the melting point.

For extremely cold installations, Kold-Hold plates are usually suspended a few inches from the roof horizontally. Other installations may mount the plates at the front or on one or both sides or, as in the case of retail milk deliveries, thin plates may be mounted vertically between each row of bottle cases.

The plates may be frozen or "charged" by any of various methods. Most common is the mounting of a small compressor on the truck driven either by an electric motor plugged into the garage circuit, a power take off from the truck transmission, an auxiliary internal combustion engine, or by a combination of these methods. The plates may also be charged from a central refrigerating plant, by means of hose connections supplied by the manufacturer.

Recent improvements in the Kold-Hold line are said to reduce freezing time by 50 per cent as compared with earlier models, to conserve space by more compact installations and to reduce operating costs through greater efficiency.

Also recently announced is a mechanical Kold-Hold truck refrigerating system furnished in a complete package with the resultant advantage of buying all of the

(TURN TO PAGE 152, PLEASE)

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Here's what The White Motor Company says about INDIUM in their two-page, four-color announcement of their new line of Super Power Trucks in the SATURDAY EVENING POST, TIME, FORTUNE, COLLIERS and TRADE PAPERS.



INDIUM TREATED BEARINGS . . . Aviation-type copper lead, impregnated as in high power output aviation engines—with Indium. Prevents deterioration due to acid condition in the oil.



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Ever watch a service man give a tire valve "the works" to line up a tube when mounting a tire? Some use special tools—most just reach for their pliers, grab the valve and haul away. Leaky valves would be common if the more than one hundred and fifty million standard tire valves in daily use were not "built to take it".

Schrader tire valves have a "backbone" machined from solid brass rod. Extending full length, this sturdy housing completely safeguards the valve mechanism from plier

pressure, rim hole friction and the wear and tear of mounting. The valve cap provides the final safeguard against the normal abuses of everyday operation. Guaranteed airtight up to 250 lbs. pressure, it shuts out dirt . . . and seals the valve mouth.

Schrader REG. U.S. PAT. OFF. TIRE VALVES



A. SCHRADER'S SON Division of Scovill Manufacturing Company, Incorporated **BROOKLYN, NEW YORK**

(CONTINUED FROM PAGE 150)
equipment from a single source. The system uses the Carrier refrigerating mechanism which incorporates a 4-cyl. Waukesha gasoline engine in conjunction with Carrier compressor and condensor. Kold-Hold plates are, of course, used inside the body.

Century Power System

(See Fig. 4, Page 50)

A complete source of electric power for use with any standard mechanical truck refrigerating mechanism is offered by Century Electric Co., St. Louis, Mo. Known as the Century Whitaker-Upp Power system, the outfit includes a power take-off (designed for each particular

truck model), a 115-volt variable-speed constant-voltage generator, a dual-wound motor for use on either AC or DC power, complete electrical controls (including temperature controls, overload relays and change-over switch) and all accessories such as mounting brackets, etc.

When the truck is in operation current is supplied to the DC half of the dual-wound motor from the Century generator operating on the power take-off. When the truck is in the garage, current is supplied from a plug in source to the AC half of the dual motor. The motor is, of course, connected to a standard compressor and refrigerant is delivered to the truck body through any of the various methods avail-

able, including various types of cooling coils and the hold over plates.

If a fan type evaporator or cooling coil is used, the Century system has the added advantage of being able to supply ample direct current for the fan operation, either from the generator when the truck is in motion, or from the DC side of the dual motor when the motor is operating on AC current.

Light-weight and extremely small operating cost are advantages of the system and successful installations show instances of temperatures being maintained as low as -15 deg.

It becomes obvious that coils would be satisfactory with this system if the truck is to operate on long hauls without extended lay-overs away from the garage. But if long delays or multi-stops are expected, no current would be available and hold-over plates would undoubtedly be advisable.

Air Induction Ice Bunker

(See Fig. 8, Page 52)

One of the simplest of all refrigerating systems on the market is the Air Induction Ice Bunkers, made by the Air Induction Ice Bunker Corp., 68 Hudson St., Hoboken, N. J. Using water ice as its only refrigerant, the unit consists of an ice basket constructed of heavy metal enclosed within an outer casing of 16-gage metal.

A six-volt suction type blower, mounted near the roof and operated by the truck's electrical system, draws warm air from the top of the truck compartment and forces it down a connecting pipe and through the ice bunker. An unusual feature is the installation of a filter at the blower intake which assures clean air circulation and the elimination of foreign particles. Humidification is a natural by-product of the system. A heavy drip pan with 3½ in. sides extending outside the entire casing, collects melting water and expels it through a pipe in the floor of the truck.

Three sizes are available holding 150, 250 and 350 lb. respectively capable of refrigerating truck bodies of 200, 250 and 350 cu. ft. capacities to the neighborhood of 40 deg. making it suitable for meat and produce and other operations requiring this temperature or higher. Overall dimensions range up to 21 by 38 in. and 36 in. high.

According to the manufacturers, the small unit will consume about 75 lb. of ice, the larger units about 100 lb. per eight-hour day assuming good insulation continuous fan operation and an outside temperature of about 85 deg. Initial cost for all units is under \$100 and installation may be made in 30 minutes.

"Chill-Cold" Ice Refrigeration

(See Fig. 9, Page 52)

"Chill-Cold" truck refrigeration, offered by the Chill Cold Mfg. Co., 7944 S. Ingleside Ave., Chicago, provides circulated air through an ice bunker using water ice as its refrigerant.

Consisting essentially of an ice bunker of heavy galvanized steel the unit operates on the principle that cold air falls toward

(TURN TO PAGE 154, PLEASE)

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With American defense rapidly assuming a rightful potency, it is gratifying to know that the same tireless guardians which have given so much to the safety and efficiency of the world's finest transport system, stand instantly ready to serve America in any emergency ★ Whether it be the accelerated movement of vital materials or the control of mechanized combat units, the position of the Bendix-Westinghouse Company is one of alert preparedness ★ Tuned to

meet any eventuality squarely, Bendix-Westinghouse Air Brakes have, through countless millions of miles of peacetime service, prepared for any role in which they may be cast ★ For twenty years they have served American transportation faithfully . . . This privilege has been enjoyed and, to a man, the Bendix-Westinghouse Company intends to continue it indefinitely. To this end, ever mindful of our responsibility to the nation, we have set our course inexorably.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE CO., PITTSBURGH, PA.

(CONTINUED FROM PAGE 152)

the floor of the truck. Hence an air inlet is provided below the bunker and an air outlet at the roof. A six-volt motor operating from the truck's electrical system provides circulation at the rate of 100 cu. ft. per minute. As air enters at the bottom it first passes through a shower of water dripping from the ice bunker. A suction duct imbedded in the ice then carries air through the ice to the blower and thence to the roof. Excellent humidification as well as circulation, is assured by the process.

Normal ice consumption with blower operated continuously is said to run about 20 per cent of the total ice load per eight-

hour day. Size of the units range from 100 lb. to 900 lb. capacity, capable of handling bodies up to 1000 cu. ft. A heavy drip pan is provided which carries melting water overboard through the bottom.

A transformer is available which permits the blower to be operated by current in the garage, thus providing continuous refrigeration for over-night or longer periods without draining the truck battery.

D & G Brine Equipment

(See Fig. 17, Page 53)

A refrigerating system using water ice and salt in a self-contained unit replete with brine pump and blower is furnished by Dromgold & Glenn, 332 South Michigan

Ave., Chicago. The most unusual feature of this system is the fact that air is circulated through a brine spray as well as over the ice bunker thus eliminating the use of cooling coil of any kind and the resultant susceptibility of frosting.

Main part of the unit is a galvanized copper-bearing steel chamber which houses a 600-lb. ice bunker, the bronze, self-cleaning spray nozzles and a baffled air chamber with outlet in the side of the unit near the top. Floor space needed is 42 in. x 16 in.

On the pittance of the unit is mounted a squirrel-cage or centrifugal fan for air circulation and a centrifugal bronze pump for brine circulation. Both are belt driven by a 1 hp., 4-cycle gasoline engine, usually mounted on the outside of the truck body. Since all mechanisms including the strainer are mounted outside the main body, all are easily accessible for servicing.

At recommended engine speed of 3400 r.p.m. air in a 24-ft. trailer is said to be completely circulated every four minutes. The actual cooling cycle is as follows: Air enters the unit through the blower, passes down and through one set of sprays, passes over the ice bunker, comes up through another set of sprays and finally out through the opening near the top. Sustained refrigeration to temperatures as low as 22 deg. are possible with this type of equipment.

Temperature control is regulated by amount of salt used, and the amount of time the engine is running. The latter is stopped and started manually by the driver from the outside. A special outside-reading thermometer is usually installed in the nose of the body.

"Coldjet" and "BloKold" Systems

(See Figs. 14, 15, 16, Page 53)

"Coldjet" refrigeration uses ice and salt as a refrigerant and is capable of maintaining temperatures just under 40 deg. "BloKold" truck refrigeration uses solid carbon dioxide refrigerant with forced air circulation and maintains temperatures of 20 deg. or lower where unusually good insulation is furnished. Both systems are self-powered and self-contained and both are manufactured by Industrial Mfg. & Eng. Co., 3845 N. Ravenswood Ave., Chicago.

The galvanized "Coldjet" container occupies a 42 in. x 14 in. floor space, and holds 600 lb. of cracked ice and salt. A centrifugal pump circulates the resulting brine through a cooling coil mounted on top of the container and returns it through a series of jets to the top of the ice bunker for re-cooling. A fan circulates air through the coil and throughout the truck body. Fan and pump are belt driven by a ¾ hp. gasoline engine usually mounted on the outside of the body. An easily-accessible strainer at the bottom of the unit keeps dirt out of the brine. Installation time is about 6 man-hours. Unloaded weight of the entire outfit including motor is 418 lb.

The "BloKold" system is normally furnished in two entirely separate parts: the refrigerant bunker with fan and motor and the power unit.

The bunker, mounted inside the body (TURN TO PAGE 156, PLEASE)

Takes the Tough Jobs in Its *Stride!*



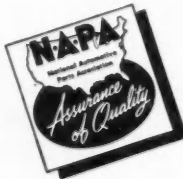
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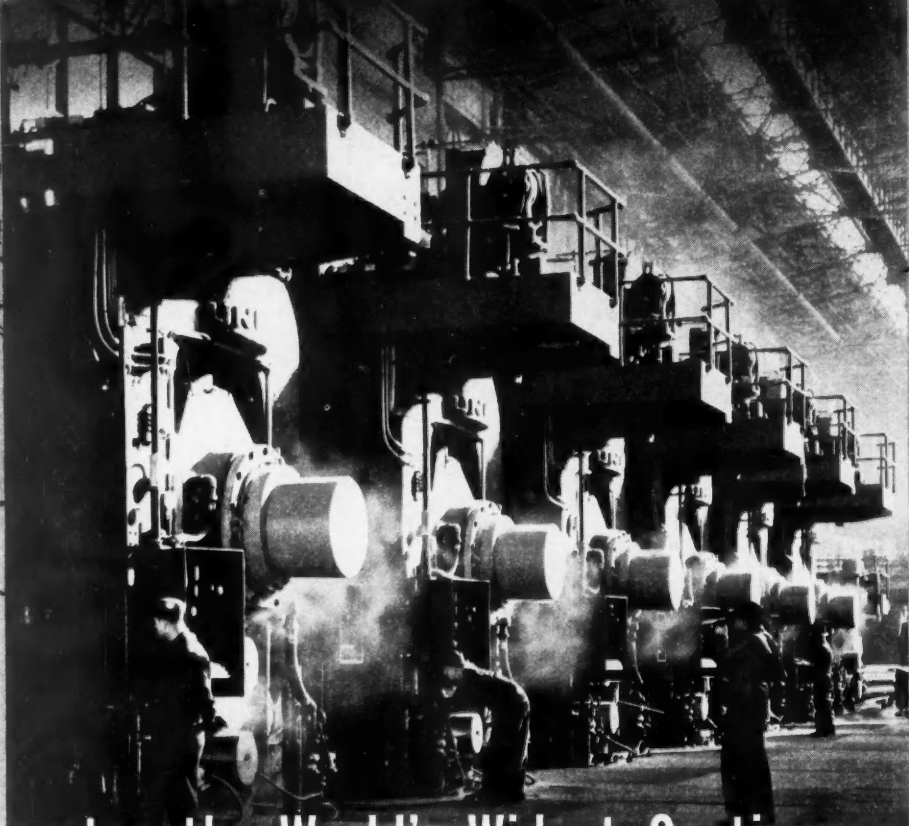
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Master stocks of Monmouth Clutch Plates and Parts for all cars and trucks are maintained in NAPA Warehouses from coast to coast, assisting jobbers in every section of the country to give prompt service even on rarely called-for numbers.

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4000 tons in a single day. And now, in these mills along the lazy Cuyahoga River and far from scenes of conflict, more than two thousand men who know steel work in safety to insure the comfort and progress of America—and its greater security.

Yet this is only one of the many improvements in plant facilities made by Republic that will help our country in any national emergency when the need is paramount for more and better *steel—first line of national defense.*

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(CONTINUED FROM PAGE 154)

and insulated to prevent unnecessary melting, measures 15 in. x 17 in. x 66 in. and holds 250 lb. of solid carbon dioxide. Its 14-in. fan is powered by a 1/20 hp. electric motor. A thermostat controls the motor automatically providing air circulation over the refrigerant only when needed to maintain the called-for temperature. Through this method of controlled melting and controlled circulation, refrigerant consumption is said to be much less than in the straight bunker type.

The power unit of the "BloKold" system is housed in a metal box 18 in. x 18 in. x 28 in. and suspended below the truck body. It contains a 3/4 hp. gasoline engine,

a 12-volt generator and two 6-volt storage batteries, furnishing a completely independent source of current supply for the fan motor. The gasoline engine is started manually using the generator as a starter and shuts off automatically when charging is complete. Since the engine's only function is to keep the batteries charged, normal operation requires but a few hours operation per day. Weight of the power unit is 320 lb.

Broquinda Dual Refrigerant System

A patented refrigeration system using solid carbon dioxide and featuring controlled temperature without the use of a single moving part is offered by Broquinda

Sales Co., Inc., Times Building, St. Petersburg, Fla. Temperatures in the vicinity of zero or any higher point may be maintained as long as 48 hours without reloading, if necessary.

Basic feature of the system is the use of an insulated compartment for solid carbon dioxide and a separate liquid refrigerant which circulates through cooling coils. The ice bunker is hermetically sealed and surrounded by a hollow jacket filled with the secondary refrigerant. This jacket is connected with the cooling coils and circulation of the refrigerant is maintained by gravity—down through the bunker jacket and up through the cooling coils. The degree of refrigeration depends on the circulation of this secondary liquid; hence to control temperatures within the body it is only necessary to control the flow by simple valving. This may be done as often as desired varying the temperature to suit each particular load. The control is mounted outside the body compartment for easy accessibility.

The ice bunker is usually mounted at the front and near the top of the body compartment and provided with a hatch for loading from the outside. Coils are mounted on the side or roof of the body. A provision is made for exhausting the carbon dioxide gas (given off as the solid refrigerant melts) outside the body or any part of it may be injected inside when desired. Often a quantity of the gas is considered desirable. Controls for this operation are also conveniently located.

Capacity of the bunker and size of the cooling coils are arranged individually to suit the particular requirements of the user. Hence no standard overall dimensions are available.

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Read How Haskellite Panels Reduce Dead Weight of Doors, Side Panels, Roofs and Floors—While Increasing Strength

Avoid excess dead weight in the bodies you build or use—sidestep the heavy penalty in extra operating expense and decreased payload it exacts throughout the useful life of a body—by turning to Haskellite PLYMETL and PHEMALOID. Investigate these modern materials; check these facts:

PLYMETL Panels weigh less than traditional materials—and because their increased strength and rigidity eliminate the need for heavy, space-wasting structural members, they reduce dead body weight to a minimum. Further, doors and side panels of PLYMETL can be furnished completely fabricated with necessary cut-outs and extensions, eliminating the need for costly dies and greatly simplifying and speeding up

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Large panels of hardwood plywood, phenolic resin-bonded, have better strength-weight characteristics than solid tongue and groove hardwood.

construction. Doors so furnished often actually cost less installed than conventional steel doors.

Floors and roofs of PHEMALOID make possible still further dead weight savings... besides affording increased strength, one-piece, dust-proof floor construction, and significant fabricating economies.

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Toone-McCoy Solid Carbon Dioxide System

A patented refrigerating system said to obtain a remarkable degree of efficiency from the cooling properties of solid carbon dioxide is currently being developed by Toone-McCoy Corp., 326 S. W. Eleventh Ave., Portland, Ore. The system is expected to be available for truck operators on the west coast during the coming winter and nationally by the summer of 1941.

Basically the system consists of a hermetically sealed bunker for the carbon dioxide and insulated from the main part of the truck body. This insulation is used because the solid carbon dioxide has a temperature of 109 deg. below zero—far lower than can be used efficiently for final truck cooling. Next there are a series of absorption plates and fins which are in actual contact with the refrigerant but which protrude into a separate heat absorbing chamber. To this chamber is attached a slow speed squirrel-cage blower which is actually powered by the confined gas given off by the melting solid. This provides sufficient circulation of air from and to the truck body through the heat absorbing chamber to maintain temperatures well below zero, if desired.

Temperature control for the body is available by the simple process of valving.
(TURN TO PAGE 158, PLEASE)



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GLOBE Spinning Power Batteries are recognized for their *superior performance in modern replacement service . . . in pleasure cars, commercial vehicles, heavy-duty trucks, tractors and buses. Globe users collect dividends in terms of longer power-life, lower maintenance cost and dependable, year 'round Split-Second Starting.*

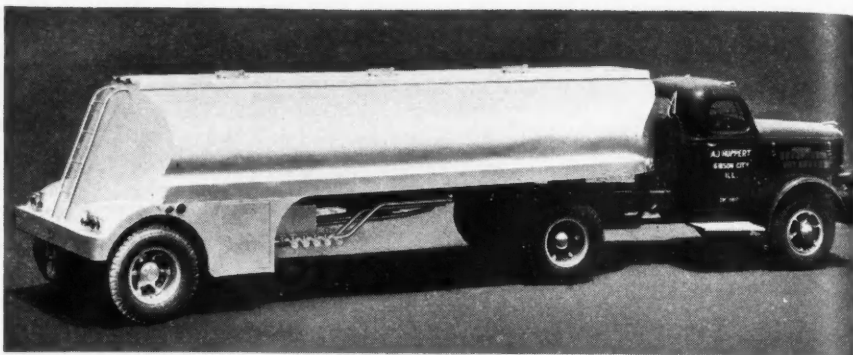
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(CONTINUED FROM PAGE 156)

ing the amount of gas admitted to the blower which also controls, to a large degree, the melting of the refrigerant. A thermostat provides this regulation.

Experimental operating statistics show that a 1300 cu. ft. truck body, properly insulated can be refrigerated under normal conditions for 24 hours using 125 lb. of solid carbon dioxide. The entire unit, constructed of duraluminum, weighs 125 lb. (empty) is 25 in. in diameter and 6 ft. long. It may be mounted in front, underneath or inside the body. If mounted outside two holes approximately 6 in. x 12 in. must be cut through the body for intake and outlet of air.



Heil built this modern trailerized tank to carry 4000 gal. in three compartments. Cabinet ahead of left rear wheel holds tools and a 2 in. Smith meter.



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KESTER RADIATOR SOLDER

FORD FOR '41

(CONTINUED FROM PAGE 35)

line remain the same as before—134 in., 158 in., and a 194 in. school bus chassis, while the COE remain at 101, 134, and 158 in.

Noteworthy improvements on the 35 hp. engine, of special interest to fleetmen are: separated camshaft gear of aluminum alloy bolted onto the camshaft flange; valve stem section operating in guide area nitrided to increase life; vacuum connection moved to main manifold riser so as to provide a steady source of vacuum power for windshield wipers, etc.

Major improvements in the chassis of the heavy-duty models incorporate the use of 12-leaf rear springs, instead of the 10-leaf assembly used last year, combined with five-leaf helper springs which are optional, installed at the factory; introduction of frame side rail reinforcements, installed at the factory on order. The frame reinforcements extend from the rear of the front spring to the front of the rear spring and are a tight fit in the side rails.

New styling distinguishes and enhances the appearance of the new line of Ford trucks. Chrome is used more extensively on hood and radiator and colors are brighter, in keeping with a noticeable trend among operators for trucking equipment with greater visibility.

New colors for 1941 are: Harbor gray, Cayuga blue, Mayfair maroon, Lochaven green and Palisade gray.

Operators can select from seven different stake units in the new Ford line. Dean of the line is the 158-in., wheelbase "regular" with load space 142 by 82 in.

There are also the 134-in. wheelbase stake, with load space 106 by 82

(TURN TO PAGE 160, PLEASE)

*"In my business—***WHEN
YOU GOTTA GO...
YOU GOTTA GO!***"*



—AND AUTO-LITE BATTERIES KEEP PAY LOADS MOVING FOR US," says DONALD L. COE

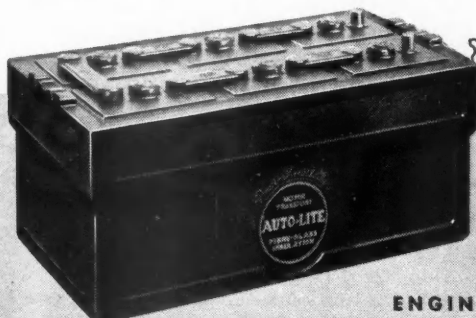
"**D**ELAYS can be mighty costly to a fleet operator, so we take no chances. We are using Auto-Lite Batteries 100 per cent," writes Donald L. Coe of the Empire Builders Supply Co., Inc. "The dependable performance of your batteries helps us get loads through on schedule, keeps our trucks on the road. At the same time we have cut our battery costs plenty because Auto-Lites last practically twice as long in service as the batteries we had been using."

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BATTERIES**
AS ORIGINAL
EQUIPMENT

AUTO-LITE BATTERIES

ENGINEERED AS A BALANCED UNIT OF THE ELECTRICAL SYSTEM

(CONTINUED FROM PAGE 158)
in.; the 134-inch wheelbase cab-over-engine stake, with load space 142 by 82 in.; the 101-in. wheelbase cab-over-engine stake, with load space 106 by 82 in.; the 1-ton and $\frac{3}{4}$ -ton stakes with load space 90 by 74 in. and the 112-in. wheelbase stake with load space 80 by 67 in.

Four panel units are offered to suit the varying needs of operators. These are the 134-in. wheelbase panel trucks with load space 119 $\frac{1}{4}$ by 55 $\frac{1}{2}$ by 55 $\frac{1}{4}$ in.; the $\frac{3}{4}$ and 1-ton panel

trucks with load space 107 $\frac{1}{4}$ by 55 $\frac{1}{4}$ by 55 $\frac{1}{4}$ and 112-in. wheelbase panel with load space 88 by 55 by 51 $\frac{1}{2}$ in.

In addition there is the sedan delivery designed especially for operators who prefer deluxe-type delivery equipment. It has finger-tip gear shift, a body capacity of 86.6 cu. ft. Sides are lined with composition wood. Spare wheel and tire are in a compartment under the floor, accessible when rear door is open.

Three units make up the line of open type express bodies. These are

the $\frac{3}{4}$ and 1-ton express trucks, with load space 96 by 54 in. and the 112-in. wheelbase pickup, with load space 77 $\frac{1}{4}$ by 53 $\frac{1}{2}$ in.

Two optional hydraulic hoists are offered on the 134-in. wheelbase dump truck. One is an arm type, the other a direct-lift type. Body capacity is 1 $\frac{1}{2}$ cu. yd. Auxiliary springs are included as standard equipment. Dual wheels, heavy-duty tires, two-speed axle and reinforced frame are available at extra cost.

For tractor-trailer operations, the 134-in. wheelbase regular and the 101-in. wheelbase cab-over-engine trucks are available as cab-and-chassis with shortened frames at no extra cost, ready for fifth wheel installations.

Operators who wish to use bodies built by other manufacturers will find that all Ford units are conveniently available as chassis with cab, and all except the cab-over-engine types as chassis with windshield or chassis with cowl.

Three-quarter and 1-ton trucks with 85-hp. engine are equipped with a 3-speed transmission. A 4-speed transmission is standard with the 30-hp. engine and optional at extra cost in 85-hp. units on these types.

For haulers with special operating conditions to meet, a factory-installed two-speed axle is available at extra cost on "regular" and cab-over-engine trucks. It has a low-speed ratio of 8.11 to 1 and a high-speed ratio of 5.83 to 1.

The Shiftoguide speedometer is again included as an important aid to economical operation of Ford "regular" and cab-over-engine trucks. It shows drivers when to shift gears in order to obtain maximum pulling ability and economy with minimum engine wear.

The conventional cab features stronger and more durable construction. The upper portion of cowl, windshield opening and complete roof panel are formed in a single stamping, eliminating the joint above the windshield. Reinforcing the inside of this large stamping at the front is another one-piece stamping comprising the instrument panel, vertical side pieces and windshield header. Welded together these stampings form a strong box section.

The cab also features a steel toe board and one-piece steel floor welded to the body all around.

"I AGREE 100% WITH THE MEN IN MY SHOP,"

SAYS MR. H. C. ELLER

EASY working qualities... jobs put through on schedule... are good reasons why Mr. Eller's paint crew likes Automotive DULUX above other finishes.

The sparkling, sleek appearance of DULUX makes every truck a handsome advertisement for your business. Its unusual durability means dollars saved on every truck! Because DULUX keeps its fine appearance so much longer it means far fewer trips to the paint shop.

A Du Pont Representative will be glad to tell you why DULUX gives you "MORE MONTHS TO THE GALLON." E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Refinish Sales, Wilmington, Delaware.

AUTO PAINTING
SEAT COVERS
UPHOLSTERING AND
TUNE
BODY REBUILDING
POWDER AND ANGLE
STRAIGHTENING



ELLER & GRIPP COMPANY
QUICK SERVICE ALL MAKES OF CARS AND TRUCKS

HOUSTON, TEXAS

E. I. du Pont de Nemours & Co.
Wilmington, Delaware

Dear Sirs:

When a painter swears by and not at a finish, you know it's good!

That's why I thought you'd like to know how the men in my shop feel about DULUX. Having tried just about every other kind on the market, they've learned from experience that DULUX is the last word in truck finishes.

Because it goes on so easily and dries quickly to a high gloss that needs no rubbing - DULUX makes it possible for my painters to put jobs through faster and on schedule.

I feel, too, that they get a lot of satisfaction in knowing that customers are pleased with their work and are going to get a whole lot better service with DULUX.

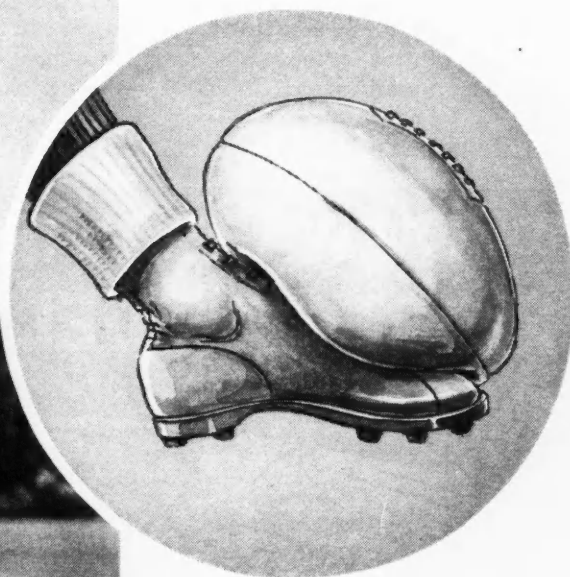
Truly yours,

ELLER & GRIPP COMPANY

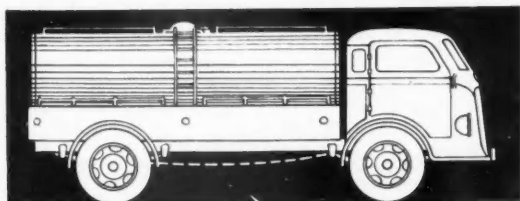
H.C. Eller



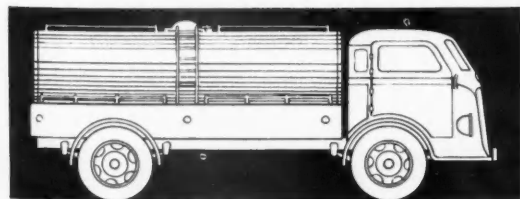
Automotive DULUX
GIVES MORE MONTHS TO THE GALLON



IT'S THE REBOUND THAT COUNTS!



Under heavy over-loads, non-heat treated frames remain sprung when the load is removed.



Parish Heat-Treated Frames will return to normal. Heat treatment gives them this comeback.

PRESSED STEEL HEAT-TREATED FRAMES FOR TRUCKS & TRAILERS

Just as the rebound of the ball from the kicker's foot can change the entire complexion of the game, so too, does the "rebound" of a PARISH Heat-Treated Frame from countless road shocks and load-stresses affect the future of a truck. In fact, it IS the truck's future . . . both in dependable service life and economical maintenance.

With a high elastic limit and a fatigue value more than 200% greater than that of non-heat-treated frames, PARISH Frames are unaffected by continuous side, vertical or end stresses. Only a twist or bend which wrecks the truck prevents a PARISH Heat-Treated Frame from "springing back" to its original position. With all truck parts held in proper alignment, maintenance costs drop to a minimum.

So, for economy's sake . . . for safety's sake . . . insist upon the frame with the "spring back" . . . the PARISH Heat-Treated Frame.

Write today for our booklet.

PARISH PRESSED STEEL COMPANY
READING, PENNA.

Subsidiary of SPICER MANUFACTURING CORPORATION
Western Representative: F. Somers Peterson, 57 California Street, San Francisco, Cal.

PARISH

FLEET CARS FOR '41

(CONTINUED FROM PAGE 45)

lic, and that alterations desired by fleetmen would result in assembly line interruption and confusion that would result in even higher costs to the fleetmen. Apologists for this belief included many fleetmen.

Apparently fleetmen can have what they have wanted, because Ford is now prepared to give it to them and enable them to save money in doing so.

The 1941 standard Ford five-window coupe, Tudor coach and Fordor sedan come with two windshield wipers, two horns, two sun visors, two tail-lights and two door locks will be available to fleets with only one each of those accessories. Whereas the standard models come with cigar lighter, bumper guards front and rear, kick pads, dome lights and arm rests, and decorative chrome side strips, these will be omitted from the economy jobs for fleets. Also omitted will be the chrome trim around the

horn button. The fleet jobs will come with different hardware and one type of upholstery. The standard color for fleet cars will be black but fleets that have an individual color will be able to procure it without additional cost.

The 85-hp. engine is standard.

Whereas the standard list prices are \$695 for the coupe; \$735 for the Tudor, and \$775 for the Fordor, the fleet equivalents will be priced at \$665, \$700 and \$740, respectively.

PLYMOUTH

The lowest priced car in the Plymouth line is the model mounted on 117-in. wheelbase, with engine output, maximum standard of 87 hp. Among the principal mechanical features is a new transmission with 18 per cent higher ratio in second gear, making possible starts in second gear, reserving low gear only for the heavy pull as on up-grades.

A new feature is the adoption of "Safety Rim" wheels in which the rim is so formed as to prevent the bead of a flattened tire from coming off, thus reducing the hazard of blow-out or puncture.

For fleetmen, Plymouth offers several economy groups specifically designed to effect the maximum of fuel economy.

Economy group No. 1 consists of special intake manifold and down-draft carburetor with 1 in. nominal size instead of 1½ in., and a 3.7 to 1 gear ratio rear axle. With this carburetor the maximum developed horsepower is 65 hp. at 3000 r.p.m. This effects an average improvement in fuel economy of from 10 to 15 per cent. In comparison with Plymouth standard equipment, the acceleration of a car with this equipment is reduced 12 to 15 per cent at speeds below 40 m.p.h., while maximum speed is limited to about 70 m.p.h.

Economy group No. 2 consists of a hardened steel throttle stop. This normally limits the maximum speed to from 45 to 50 m.p.h., but may be altered to meet higher speeds, if desired, and is sealed to prevent tampering. The group also includes manifold heat shields to increase manifold temperatures. When this group is used in conjunction with group No. 1 economy is said to be increased as high as 15 to 20 per cent.

STEWART-WARNER ELECTRIC FUEL PUMP

PREVENTS THIS...



No more vapor-lock troubles! Trucks equipped with Stewart-Warner Electric Fuel Pumps just naturally don't have 'em! Mounted back at the fuel supply tank, away from the heat of the motor, this pump pushes fuel up to the carburetor under pressure—completely and permanently eliminating the usual cause of vapor-lock.

It's fool-proof! It's trouble-free! Contact points are sealed in a hydrogen-filled glass tube, so there can be no sticking, pitting, or burning of points. The new Stewart-Warner Electric Fuel Pump delivers 15 gallons per hour on less than 1 ampere of current! *There is no piston, and no rotating action.* Consequently wear is minimized, resulting in long life for the pump.

Let this amazing pump help keep your trucks rolling—help you cut down road calls and expensive schedule interruptions. You'll find it actually reduces operation and maintenance costs, too! Mail coupon today for complete information!

**Built by the
Pioneers of Fuel Delivery Systems**

This Model 110-D Stewart-Warner Electric Fuel Pump is backed by 25 years' experience in the manufacture of fuel delivery systems, and is, we believe, the finest fuel pump yet offered. Bears full approval of Underwriters' Laboratories, Inc.

STEWART WARNER

ELECTRIC FUEL PUMP

STEWART-WARNER CORPORATION
1876 Diversey Parkway • Chicago, Ill.

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago, Ill., Dept. K
Please send complete facts about the new Stewart-Warner Electric Fuel Pump for trucks.

Name.....

Address.....

City.....State.....

Firm Name.....

STUDEBAKER

The Studebaker Champion is billed by its producers as an economy car without need for any special provisions for fleet operation. It will be remembered that the Champion gained the title of "National Economy Champion" in 1940 at the Gilmore-Yosemite economy trials with more than 29 mpg. fuel economy to its credit.

The car still remains under 2500 lb. in weight, is powered by the six-cylinder Champion engine now rated 80 hp. at 4000 r.p.m.

Standard gear ratio for the coupe is 4.1 to 1 but Studebaker offers overdrive with 3.29 to 1 axle for the maximum economy in cruising fourth.

An automatic choke is now standard equipment.

NASH

Newest car in the low-price field is the Nash Ambassador 600, the only car in its price class with coil springs at all four corners, with unique independent suspension at the front end. (For a thorough description see the October issue.)

So far as we can find, the standard set-up makes this an economy car to a degree which requires no further modifications. The standard job has shown a fuel economy of well over 30 miles per gal., although the conservative advertised rating is 25 to 30 m.p.g. under average driving conditions.

The standard rear axle ratio is 4.1 to 1. But Nash offers an overdrive combination with a 4.4 to 1 axle.

WILLYS

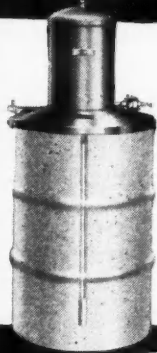
For the new season, Willys offers its Americar line with new body styling, many refinements in mechanical design. Wheelbase has been increased to 104 in. without increasing overall length while engine output has been stepped up to 63 hp. at 3800 r.p.m.

Apart from the modern styling the accent is on riding comfort, improved performance, and high fuel economy. Engineering department average road tests give the following economy figures—38 m.p.g. at 20 m.p.h.; 34 m.p.g. at 30 m.p.h.; 25 m.p.g. at 50 m.p.h.

The rear axle is new, of hypoid type, with a reduction of 4.44 to 1.

Your Fleet-

CAN BE SERVICED AT LOWER COST WITH ONE OF THESE DEPENDABLE ALEMITE POWER GUNS!

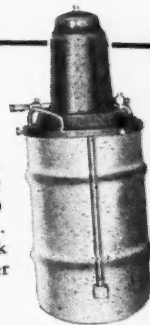


Model 6701 High Pressure Barrel Pump
Pumps Grease Direct from 400-lb. Drum

Here's the gun to save time and money for big fleets, where it is desirable to supply lubricant to several outlets from a central location. This big, powerful, ruggedly built Alemite Barrel Pump will do the job easily, efficiently, at low cost. Operates on 75 to 175 lbs. air pressure, and develops ample pressure for all chassis lubrication needs. (Low pressure model also available for transmission and differential lubrication.)

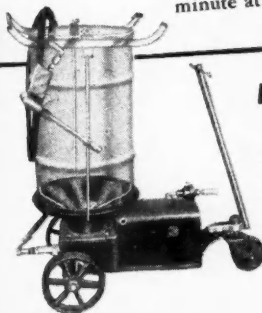
Model 7000 Master Line Barrel Pump
Pumps Direct from 100-lb. Original Drum

This efficient, economical unit with its matching low pressure barrel pump (Model 7010) has ample capacity for all requirements of the average size fleet. Handles all greases that seek their own level. Develops 35 times air pressure used (100 to 200 lbs.) Easily portable, with four ball bearing casters. Furnished complete with 7-ft. hose, control valve, and quick detachable air coupling. Delivers 15 oz. per minute at 125 lbs. pressure.



Model 6428 "Rock Crusher" Power Gun
Easily Pumps Heavy Fibrous Lubricants

No other power gun on the market equals the famous Alemite "Rock Crusher" for dependable, trouble-free delivery of fibrous grease. Patented construction automatically eliminates air pockets. Easily portable, with three large wheels. Complete with 10-ft. hose, control valve, and adapters. Hose rack keeps hose off floor. Handles all grades of fibrous, viscous, and plastic lubricants. Develops 33 times air pressure used.



Model 6184 25-lb. Pneumatic Power Gun
For Positive High Pressure Lubrication

Built for long life and dependable service, this easily portable 25-lb. air-operated Alemite Power Gun may meet all your high pressure lubrication needs. Develops 33 times air pressure used (80 to 200 lbs.) and comes complete with 7-ft. Super Alemite 20,000 Pound Hose, trouble-free check valve and adapters. Three hard rubber swivel casters. Handles viscous and regular type lubricants.



ALEMITE

REG. U. S. PAT. OFF.

ANOTHER STEWART-WARNER PRODUCT

1876 Diversey Parkway, Chicago, Ill. Dept. K

Please send catalog of Alemite Equipment which will cut my fleet maintenance and servicing costs.

Name.....

Address.....City.....State.....

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Ask Anyone in Industry!

BODIES—MATERIALS—EQUIPMENT

(Continued from Page 66)



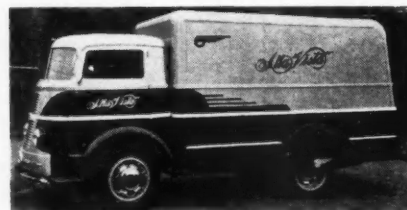
Heil-built mild steel flusher of 3500 gal. capacity complete with nozzles and controls. Special centrifugal pump operated by power take-off is in rear.



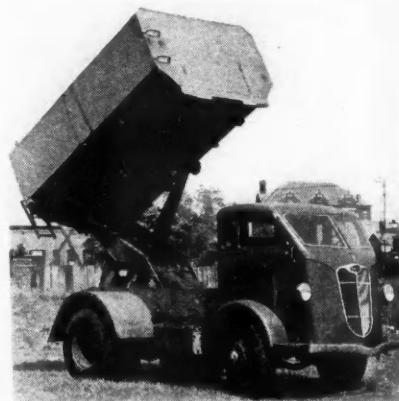
The Herman Body Co. electrically welded high tensile steel to fabricate this body. The sides are insulated with 5 in. of Dry-Zero and top has 6 in. Floor has 4 in. of cork with 1 in. spruce floor above and below.



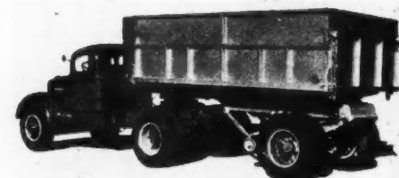
Built of steel, insulated and lined with plywood this Williamsen-built dairy body is 6 ft. by 5 ft. by 5 ft. The floor is lowest at driver's seat. Folding type doors are standard.



Insulation in this 450 gal. ice cream body by Herman consists of cells formed of 1 in. cork board filled with Dry-Zero. It has Dole holdover plates.



This high-lift jack-knife dump unit was built by Heil. The body is 12 ft. 6 in. by 94 3/4 in. for a capacity of 390 cu. ft. Material is 10 gage H.C. steel. Hoist is SL-3-37T Heil Hi-Lift. Spill-way opening is 17 in. by 14 in.



Truck Engineering Co. model 5SF semi-trailer body of 16 cu. yd. capacity for 12 tons of coal. Unit will meet an 18,000 lb. axle load limitation

A ROUSING-WELCOME
to these
Newcomers!



**CLEARANCE
OR MARKER LIGHTS**

THREE outstanding additions to K-D PRODUCTS
... for flat or corrugated surface mounting ...
... strong ... unfailing ... designed and built for
unremitting service as clearance OR marker lights.



MODEL No. 539
circular



MODEL No. 540
tear-shape



MODEL No. 541
oblong—with
Fresnel lens

Note: These are built SHALLOW for protection against sideswiping or scraping.

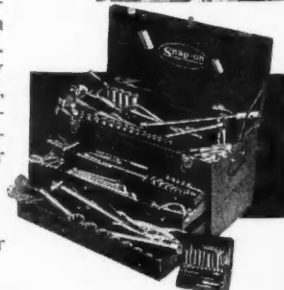
Write for new Catalog No. 40

Members by invitation ... Rice Leaders of the World Ass'n.

The K-D LAMP Co.
CINCINNATI, OHIO

He's almost
**STANDARD
EQUIPMENT...**

To thousands of mechanics "Snap-on" is as indispensable as the socket wrench that named him 20 years ago. For he brings you the tool knowledge of an entire industry ... newest methods for the most profitable handling of new service problems PLUS the largest selection of service tools in America ... 2200 designs and sizes for every conceivable operation on trucks, buses, cars and tractors. "Snap-on's" regular visits can be of immense value to both you and your men in keeping maintenance costs low and efficiency high. For quality tools and tool service, see your Snap-on Salesman ... or write for full information.



Snap-on
SERVICE TOOLS
The Choice of Better Mechanics

The set your mechanics should own—No. 488—contains every basic tool.

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Dept. CCJ-11
Kenosha, Wisconsin

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COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

**This EXTRA
Bearing Mileage
is *Free***



● Size for size, Tyson Cageless Bearings have twice the average mileage of conventional cage-type bearings. This is because Tyson has replaced the space-consuming cage with extra load-carrying rolls. With more rolls to carry the load, it's easy to see why Tyson Cageless Bearings "lead a double life." Tie in with Tyson now.

Cageless FOR HARD SERVICE

Cage-type FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

CCJ QUIZ



(Correct Answers on Page 213)

This is a very common type of quiz this month . . . but it's the "quizee" and not the "quizzer" who makes it common. Your task is to mention what all of the names in each group have in common. Let's get going . . . 10 points to your credit for each correct answer. 100 is perfect.

1

Start off by checking what all of these have in common: Zerone, Zerex, Cavalon.

All 3: (a) are anti-freezes, (b) are manufactured by E. I. du Pont de Nemours & Co., (c) have been put on the market within the last three years.

2

Now tell us what these 3 men have in common: Wm. P. Knudsen, Horace Dodge, Charles Sorenson.

All 3: (a) were once connected with

Ford Motor Co., (b) were born in Europe, (c) have at one time or other held the position of president of General Motors Corp.

3

Here are 3 truck manufacturers. What have they in common? Autocar Co., Diamond T Motor Car Co., International Harvester Co.

All 3: (a) had big exhibit at the 1939-40 World's Fair, (b) have been organized since before 1910, (c) have their main plants at Detroit, Mich.

4

This one's alphabet soup. What have these hieroglyphics in common? SKF, YKL, USL.

All 3 are: (a) important automotive societies, (b) trade names of automotive products, (c) commissions set up by the Federal Government.

5

Is there a metallurgist in the audience? Maybe he can tell what these three have in common: Manganese, Chromium, Vanadium.

All 3 are used to make: (a) a shinier steel, (b) a harder steel, (c) a more malleable steel.

6

Next . . . state what these states have in common: Idaho, Nevada, South Dakota.

All 3 states: (a) are giving voters the opportunity to vote on Anti-Diversion amendments in the November elections, (b) have begun work on the new super-highways rivaling the Pennsylvania Super-Highway recently opened to traffic, (c) have enacted new "emergency" gasoline taxes within the past three months.

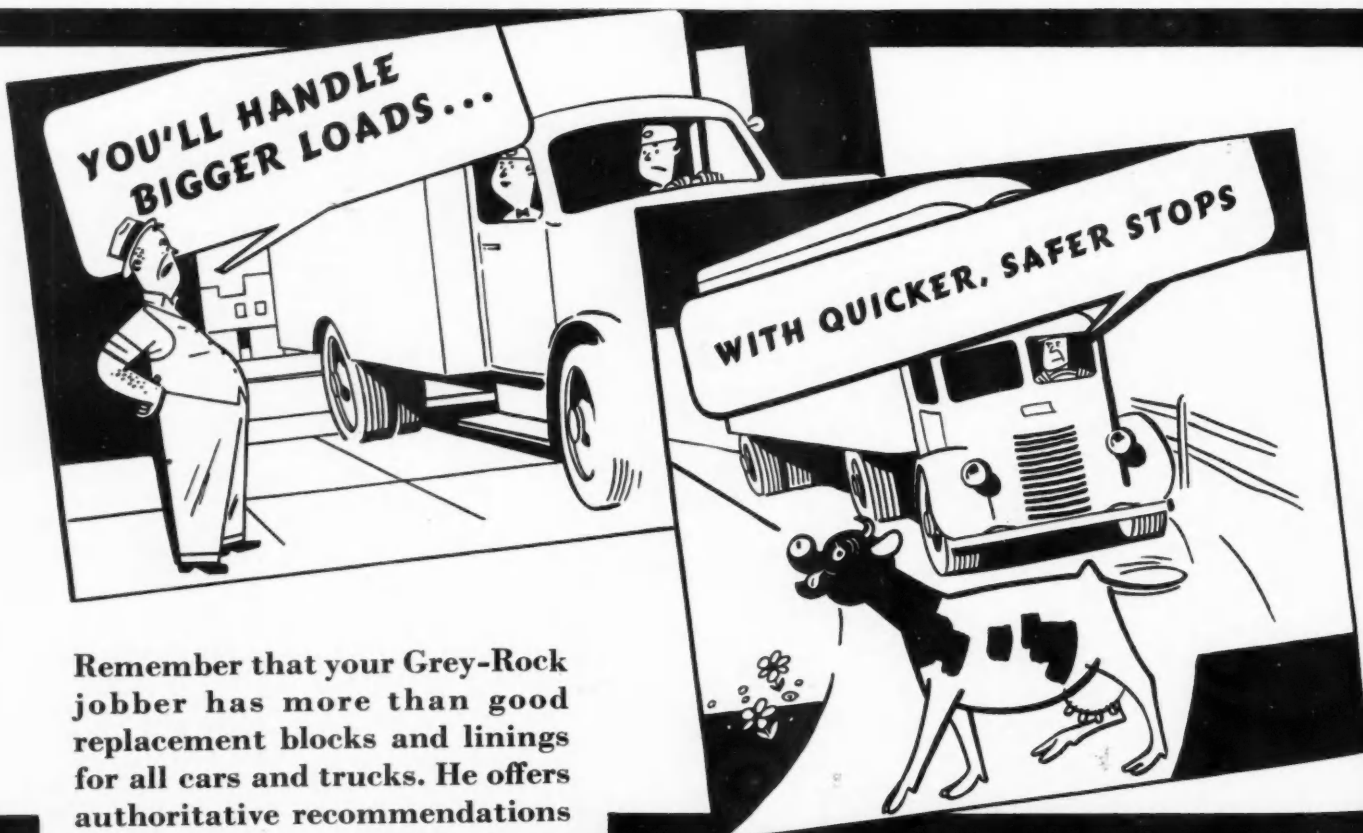
7

Three men . . . are they just names to you or can you find something they all have in common? Carl Zimmerschied, Wm. Woodside, Walter Phipps.

All 3 have found their place in early automotive annals as: (a) financiers, (b) chemists, (c) metallurgists.

8

Don't go behind the eight-ball on this one. What have these in common: Wheel Hubs, Brake Pedals, Bearing Caps.



Remember that your Grey-Rock jobber has more than good replacement blocks and linings for all cars and trucks. He offers authoritative recommendations for all servicing, trouble shooting, and inspection-passing problems, and he gives prompt service. Call him on the very next job.

Grey-Rock

All 3 are generally made of: (a) malleable iron castings, (b) forged steel, (c) pressed steel.

9

In the home stretch . . . what have these to share in common? Ditzler, Kem, Duco.

All 3 are: (a) new upholstery fabrics, (b) automobile and truck finishes, (c) anti-knock fluids mixed with gasoline.

10

It's time for the last question . . . so can you tell us what each of these have in common in the matter of time? The Self-Starter, 8-cylinder V-type Engine, Self-locking Differential.

All 3 were introduced between: (a) 1910 and 1915 inclusive, (b) 1916 and 1920 inclusive, (c) 1921 and 1925 inclusive.



Built by Williamsen this deluxe van body is 16 ft. 6 in. long, 7 ft. 2 in. wide and 7 ft. 3 in. high, giving 840 cu. ft. of loading space. There is also loading space above the driver

U. S. Truck Safety Awards

Hats off to the 80 truck drivers of the U. S. Truck Co., Inc., Detroit, who received approximately \$8,000 in safe-driving bonuses at the company's annual dinner on Oct. 19. Each of the men had driven at least 12 months without an accident of any kind. The company operates approximately 550 units in over-the-road service to points in Michigan.

Wilkening Shifts Personnel

Earl C. Chatfield, for the past seven years manager of the Replacement Division, Wilkening Mfg. Co., has taken over management of the company's mid-western division with headquarters in Chicago. He relieves Ray Cooper, who has been placed in charge of special activities in western districts. William E. Wilkening is new replacement sales manager at the factory.

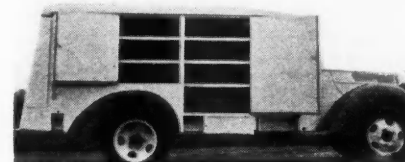
McAleer Reorganizes

The McAleer Co., Detroit, makers of automobile polish, has recently been reorganized to include additional capital. C. H. McAleer continues as president; while Carlton M. and Bradley Higbie are new additions to the board of directors.

A new polish has been tested and is about to be put on the market backed by a large-scale merchandising plan. Keeling & Co. of Indianapolis, has been retained as advertising and sales counsel.



A Burch "hydromotor" two-way hoist raises and lowers this crane accurately to desired levels. The unusual operating mechanism has but one moving part and has no exposed surfaces

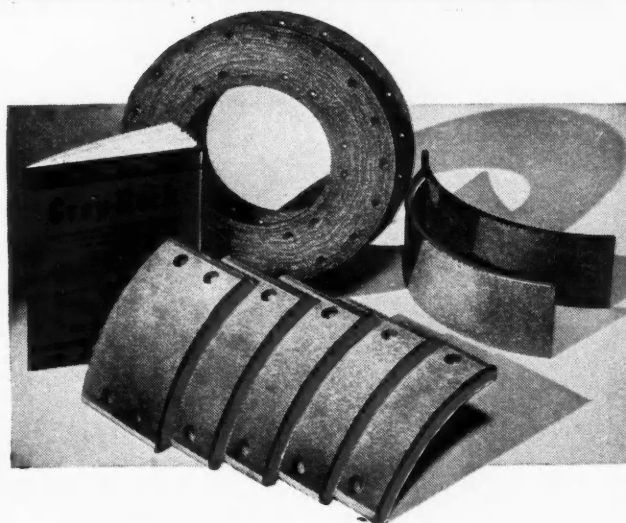


Orrville Body Co. built this body to deliver 7-Up beverages. It will carry 150 cases on corrugated galvanized shelves. Body panels are 20-gage stretcher-level steel with plywood lining

AND HAVE MORE TIME AT THE OTHER END

IF YOU START WITH
GREY-ROCK

TRUCKING CO.



Grey-Rock Recommendation Guide, specifying combinations which balance any brake system under any load or operating condition, and providing all service information.

Grey-Rock Vee-lok Clutch Facing, a revolutionary V-nested endless spiral construction, setting new heavy-duty service standards.

Grey-Rock Rivet-On Blocks—two types used alone or in combination to balance brakes on light trucks and buses. Grey-Rock Blocks (orange edges) medium friction, and HiWaY BloX (black edges) higher friction.

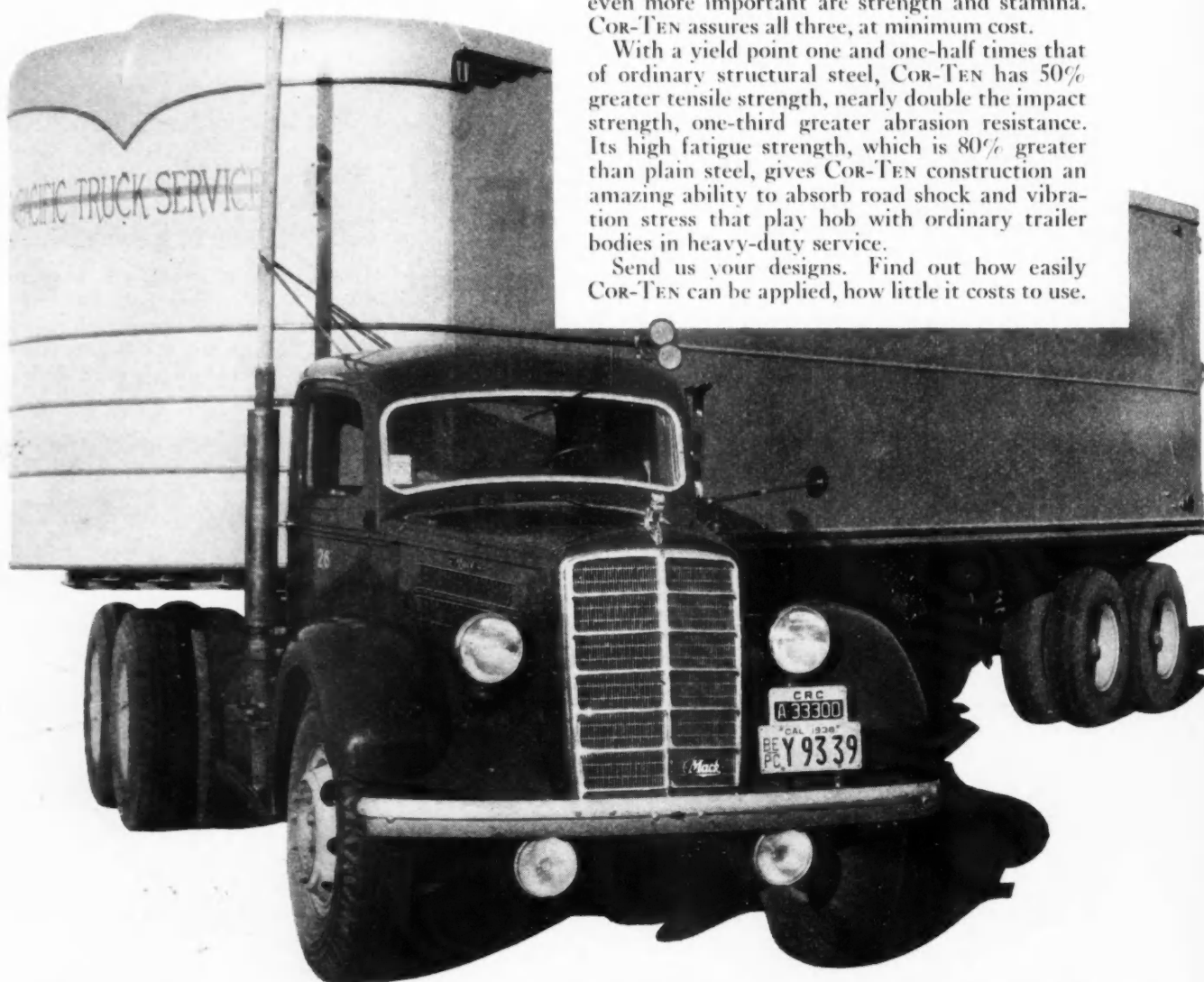
Grey-Rock Bolt-On Blocks for heavy truck and bus operations. Made in 5 types (G-K-R-N-Q) with varying characteristics, factory combined in sets for specific makes and models.

BALANCED BRAKE BLOCKS

UNITED STATES ASBESTOS DIVISION
of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS • HOSE • PACKINGS • RELINING EQUIPMENT

They carry more PAYLOAD

.. built light with
U·S·S COR-TEN



UTILITY TRAILERS are famous on the Coast for their stamina, light weight, and higher payload capacities over tough hauls. This 29 ft. semi-trailer, for example, weighs less than 10,000 lbs. gross, and has a payload capacity of 40,000 lbs. net. The COR-TEN-framed, all-steel body weighs under 3900 lbs.

COR-TEN is similarly used in more than 500 lightweight, all-steel trailer bodies built by Utility Trailer Mfg. Co. of Los Angeles, and now in highly successful operation.

Light weight is important in these units but even more important are strength and stamina. COR-TEN assures all three, at minimum cost.

With a yield point one and one-half times that of ordinary structural steel, COR-TEN has 50% greater tensile strength, nearly double the impact strength, one-third greater abrasion resistance. Its high fatigue strength, which is 80% greater than plain steel, gives COR-TEN construction an amazing ability to absorb road shock and vibration stress that play hob with ordinary trailer bodies in heavy-duty service.

Send us your designs. Find out how easily COR-TEN can be applied, how little it costs to use.

U·S·S HIGH TENSILE STEELS



AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*

COLUMBIA STEEL COMPANY, *San Francisco*

NATIONAL TUBE COMPANY, *Pittsburgh*

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UNITED STATES STEEL

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COMMERCIAL CAR JOURNAL
NOVEMBER, 1940

CHARGE BATTERY IN CAR

WITH THE **"KING" FAST** Battery Charger



SAVE TIME ON QUICK CHARGING

You can save money and valuable time with the "KING" FAST Battery Charger. It will charge one battery in car or truck and can also be used for charging a line of batteries in the regular way. Charging may be done while car or truck is being lubricated, washed, or in for repairs. It will charge one battery at an 80-ampere rate, tapering off. The rectifying element is the efficient long-lived copper sulphite type and will give years of satisfactory service. An ammeter permits setting at correct charging rate, and a voltmeter is for testing batteries before charging. An accurate time switch shuts off charger at any desired time up to 60 minutes. The cabinet is a beautiful modernistic job with chrome trim. Only requires 18" x 20" floor space. The "KING" FAST Battery Charger is a high-quality unit and sells

for \$178.00 complete with cables, etc.

Ask Your Jobber or Write Us Jobber's Name

The **ELECTRIC HEAT CONTROL CO.**
9127 INMAN AVE., CLEVELAND, OHIO

KING • Good Products Since 1914 • **KING**

DURO CAN SUPPLY THE WRENCH YOU WANT

SHORTS-LONGS OFFSETS & STRAIGHTS

That's a big order today—but not for Duro. The Duro line has grown like magic until every type of wrench is available, including many special wrenches for work in restricted places on all types of cars, trucks and aeroplanes.

Made of the finest alloy steels adding years of extra life and strength to these famous tools. Their extreme popularity permits volume production which enables the mechanic to buy these tools at very reasonable prices.

For complete satisfaction make your next tool or tool set a Duro. Ask for catalog showing the complete line.

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WHEN IT'S MADE BY DURO, IT'S RIGHT



THE ACE GOVERNOR

STOPS SPEEDING BUT ALLOWS ACCELERATION WHEN NECESSARY

If you're operating commercial cars, whether trucks, busses or passenger cars, you cannot afford to be without our new ACE GOVERNOR. You will save many times its low cost not only in maximum of safety provided by eliminating the human element in driving, but in actual dollars in the saving it affords by lowering your operating costs and reduces to a minimum the risk of accidents.

Write today for our bulletin giving in detail the important part our new ACE GOVERNOR can play in keeping your cars operating at a maximum of efficiency and safety.

F. W. Stewart Manufacturing Corp.
340 W. Huron St. Chicago, Illinois

You ought to have one of these IMPERIAL WELDING OUTFITS!

● Fleet owners are rapidly discovering that they can't get along without an Imperial Welding Outfit. With one of these outfits it is a simple matter to handle repairs that can't be handled except by welding . . . fender and body repairs, work on frames, water jackets, cylinder blocks, engine supports, bumper brackets and all kinds of odd jobs.

Many fleet owners have also found it pays to throw out antiquated welding methods. Their results are so much better with the new up-to-the-minute Imperial outfits that it becomes very costly to go on using an outfit that doesn't measure up to present day standards.

You will be interested in getting all the facts about Imperial aids for your service and repair work. Write for Catalog No. 121. It not only covers the latest information on Imperial welding outfits, but also data on brass fittings, flexible fuel lines, tubing service tools, battery testers, freezetesters, etc. Write for your copy.

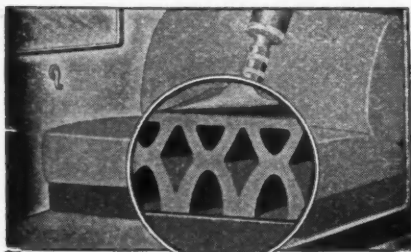
THE IMPERIAL BRASS MFG. CO., 1209 W. Harrison St., Chicago, Ill.

IMPERIAL

Automotive Products

TUBE FITTINGS • FLEXIBLE TUBING • TUBING SERVICE TOOLS
BATTERY TESTERS • FREEZETESTERS • WELDING OUTFITS AND SUPPLIES

Here's an All-Rubber SEAT CUSHION BUILT FOR WEAR



It took Karpex engineers years to develop this sensational Black Diamond seat cushion and back rest in order to meet every type of requirement. These cushions are built for gruelling, murderous duty and actually withstand the impossible. A specially processed semi-sponge rubber combined with new improved exclusive diamond grid construction guarantees extra long life, eliminates upkeep expense and helps prevent driver fatigue. There is a Black Diamond cushion designed for your truck. Get complete facts today.

KARPEX MANUFACTURING CO.

1424 E. 19th St., Indianapolis, Ind.

BY MEN WHO KNOW FLARES BEST

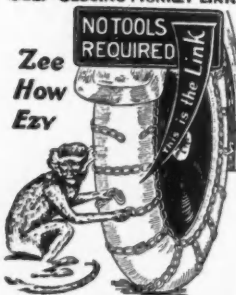
**BOLSER
FLARES!**
THE NATION'S CHOICE
2 to 1!
SEE YOUR JOBBER TODAY

HELP WANTED

SALES ENGINEER by Nationally known Automotive Shop Equipment Manufacturer for outside territorial supervision sales force and contacting and selling major accounts. Want man of good personality, one not afraid to work and work. Must have demonstrated qualifications in creative merchandising and executive sales management and engineering (mechanical or electrical or both) education and experience required. Man between 28 and 40 years of age preferred. Applications treated confidential, no references approached without permission.

Write Box 1719
COMMERCIAL CAR JOURNAL

SELF-CLOSING MONKEY LINK



Trade Mark Reg. U. S. Pat. Office
Pat. No. 1,438,560

5 MONKEY LINKS FOR 3 THE PRICE OF

Prices on all sizes of Monkey Links have been reduced 40%. This means you now can get FIVE Monkey Links for the price of THREE—an economy in price to add to the economies of time and effort.

When cross links break, use Monkey Links to make the repairs. They make your chain as good as new. No tools are required. Your drivers do the job right on the road.

FREE Sample to Fleet Owners

Write us for free samples. State number of trucks in your fleet and size of chains. We will send samples immediately.

FLOWER CITY SPECIALTY CO., Rochester, N. Y.
At All Reputable JOBBERS

ENGINEERING FORECAST

(CONTINUED FROM PAGE 31)

carburetor air. This will most likely be effected by water heat exchangers and the use of a full-flow by-pass thermostat in the water circulating system."

Two other designers look for an increase in the use of automobile shutters, while still another thinks that there is a demand for a more rugged and reliable system of control which will respond more promptly to water-jacket temperatures.

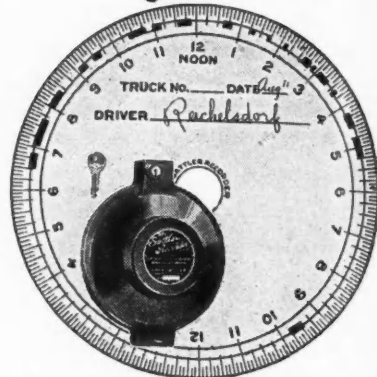
Question 4. Are we to get more power from lighter, faster-turning engines or will the power-to-weight ratio remain about as it is for a while?

All of our engineers believe that we are to get more power from lighter engines. One of them believes that the power will come without turning the engines faster, while another cautions that increased power must be accompanied by greater rigidity and increases in the bearing areas of the parts. Several others say that more power from lighter, faster-turning engines is already a full-blown trend and they see no reason why it should not continue. One adds that most of the problems thus created will be solved by the use of newly developed materials. Several mention increased compression ratios and better fuels as important factors and one says we cannot discount the possibility of the supercharger.

Question 5. Do you expect greater specialization of truck models or greater simplification of truck lines?

The engineering departments, it seems, want to make it clear that simplification or specialization is not their responsibility. If you want

The Sattler Recorder



gives a complete record of the work of a truck

Enables you to check up on each truck after every day's run. Tells if rerouting is necessary, etc. Inexpensive. Entirely self-contained. No connections of any kind.

HANS SATTLER
Sheboygan, Wisconsin

Handy BATTERY BOOSTER

WITH AUTOMATIC TIME SWITCH at no extra cost

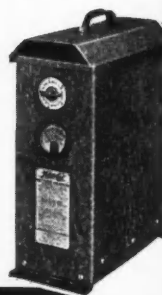
HANDY BATTERY BOOSTER No. T-30 is equipped with Time Switch which prevents over-charging. Will not injure batteries. Charging rate no higher than that of generators of late model cars. Charges 6-volt batteries in about 2 hours. Price, complete ready to use, \$79.50.

NEW LOW PRICE

\$79.50

f.o.b. factory

ASK FOR
BULLETIN 82
BALDOR ELEC. CO.
4340 Duncan Ave.,
ST. LOUIS, MO.



The Mobile REFRIGERATION UNIT

The unit offering . . .

Economy
Compactness

Adaptability

. . . in the most efficient type refrigeration on the market.

Write today for catalog.

MOBILE REFRIGERATION, INC.
10 Rockefeller Plaza, New York City

their opinion, it is strongly that there will be more specialization. Their collective explanation is that as highway transportation grows there will be more uses for it and that when a demand develops the engineering department will create a design to fit that demand. In other words, simplification looks like stagnation to the engineers.

There comes a point, however, where in light trucks it may be cheaper to use a standard model and buy it cheap rather than pay the price for a specialized truck built for individual needs.

Question 6. Do you expect the fluid flywheel to become an important factor in truck design?

One engineer frankly says that he does not have the faintest notion what place the fluid flywheel will occupy in truck design. Two others do not think it will make much of a dent, while the rest say you will not have to look too hard to find one in years to come. One comments that they will be especially valuable when used in conjunction with diesel engines and another calls attention to the fact that it eliminates shock loads which may make possible the use of lighter transmissions, rear axles and drive lines or, certainly, longer life from the ones we have. When used with some form of transmission that automatically selects the correct gear ratio, it is pointed out, changing conditions of operation can be met without judgment on the part of the driver.

Question 7. Will the diesel engine maintain its present pace or will it speed up or slow down?

If we tried to plot a life cycle for the diesel engine from the opinions of our engineers we would wind up with a screwy curve. Just to show you what expert opinions exist on diesel engines, we give you a few direct quotations: "Tremendous increase . . ." "difficulty in maintaining its present pace . . ." "nothing spectacular but steady gains . . ." "still only advisable in long distance heavy duty service . . ." "maintains its position . . ." "some increase . . ." "will continue in limited use," etc., etc.

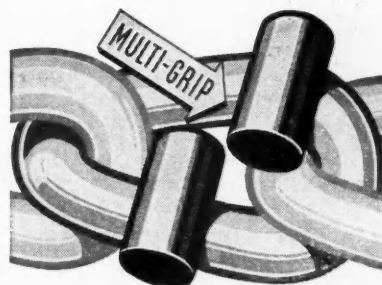
Two engineers volunteer the guess that driver comfort will be improved and increased by easier steering, more convenient change speed mechanism, better vision, improved heat-

(TURN TO NEXT PAGE, PLEASE)



MCKAYS: *Your Key to Lowest Costs!*

Here's your assurance that McKay **MULTI-GRIP** Truck Chains give *the lowest cost per mile*. (1) **MULTI-GRIP** has been cutting costs for nine years for many of the largest fleets. (2) **MULTI-GRIP**—like McKay "Regulars" and "Extra-Heavies"—is constantly *measured for mileage* by McKay Laboratories . . . in the McKay Torture Pit . . . by McKay's continuous Road Tests . . . by large fleet owners' Independent Tests. For name of nearest McKay Jobber, write or wire:



Double BARS-Double MILEAGE-Double SAFETY



A WHOLESALE MEAT COMPANY REPORTS:

"Just a line of appreciation and thanks for the wonderful Chains that your firm makes."

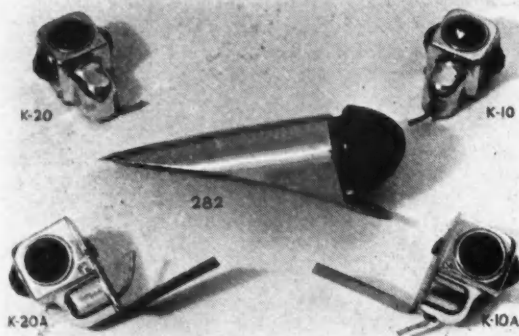
THE MCKAY COMPANY

PITTSBURGH, PA.

Sales Offices: York, Pa.

MCKAY TRUCK CHAINS

« JOBBERS EVERYWHERE »



STREAMLINE YOUR LIGHTING with ROYAL NORTON

Outstanding for buses and commercial vehicles, ROYAL DeLuxe Safety Lamps meet with full approval of the I.C.C. Die cast for solid construction, they are attractively finished in either chrome or enamel. Numbers K-10 and K-20, extremely compact lamps $1\frac{1}{2}$ " square x $2\frac{1}{4}$ " long; feature brilliant BULLS-EYE Type Lens and are visible for 1000 ft. in 3 directions with a 3 C. P. bulb. Number 282, a waterproof die casting for motor coach or any distinctive vehicle. Can be easily installed, furnished in six colors.

Other ROYAL NORTON Items:

Lighting Fixtures
Warning and Marker Lamps
Pillar and Dome Lamps
Trailer Fixtures
Reflex Signals
Special and Utility Mirrors

Fleet Operators! Write today for Catalog 40

MONROE ACME COMPANY

215 N. Aberdeen Street,

CHICAGO, ILLINOIS

NEW SpeedWay 1 1/2" No. 89 DRILL

Full size, full weight, full capacity. Specially wound, high torque 115 V Universal 500 r.p.m. SpeedWay Drill Motor. Forced air cooling, oilless bearings, new natural grip breast plate and removable side handles. Streamlined die cast case. If your dealer can't supply, order direct on 10 day trial.



SpeedWay Mfg. Co., 1840 S. 52nd Ave., Cicero, Ill.

JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors etc. Here are a few: Standard Oil Co., of La., N. J., N. Y.; Shell Petroleum Co.; Atlantic Refining Company, Tidewater Oil Company, Keeshin Motor Express Mack Trucks, Brockway, U. S. Navy.

Direct, instantaneous reading
JONES-MOTROLA-STAMFORD, CONN
432 FAIRFIELD AVENUE

SENSATIONAL!

Development for Trucks

- AIRFOAM CUSHIONS
- AIRFOAM SLEEPING PADS

Write for descriptive literature

COMFORT CUSHION CO.

5301 Grand River Detroit, Mich.

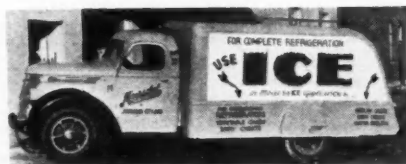
(CONTINUED FROM PAGE 207)

ing and ventilation and more comfortable seats. It is pointed out that this is not extravagance, but a necessity because of increased sustained speeds and operation in all kinds of weather.

Performance of the vehicle is another subject for continuing improvement. The engineers lament the inconvenience to other traffic and the accident hazard created by the slow vehicle. They believe impending legislation and public opinion will serve as a whip to make operators take advantage of improved operating characteristics.

Engineers believe there will be more six-wheelers and more tractor-trailers in use in the future.

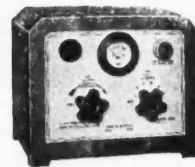
Vacuum-centrifugal spark control is being extended to the larger engines and the more universal use of air cleaners and oil filters is predicted.



This Herman body 12 ft. long, 6 ft. 6 in. wide and 7 ft. 8 in. high carries 16 blocks of ice and several hundred pounds of sized ice. Two inches of Dry-Zero is used in sides and top

NEW!

Announcing



VALLEY SUPER-DUTY CHARGER

Eliminate Run Down Batteries for Low Cost Battery Mileage. The new, improved, Valley—Guaranteed (two years) charger connects to the lighting circuit . . . is easy and economical to operate . . . no moving parts. Now it is easy and inexpensive to obtain long battery life by maintaining efficient battery charge.



Model SG-12 charges 1 to 12 6 volt batteries.

NOW ONLY \$28.00

Valley Electric Corporation

4221 Forest Park Boulevard St. Louis, Mo.

TRADE MARK NOC-OUT

HOSE CLAMPS



THE HOSE CLAMP WITH THE THUMB SCREW Use Noc-Out Hose Clamps . . . the standard of the automotive industry, for quick tightening, perfect all-around seal on your hose connections. They have the extra margin of strength which makes them the leading automotive hose clamp. Type "A" Adjustable—will fit many hose sizes. Type GBB, solid band, heavy duty clamp for Booster Brakes. GHH for all types of heater hose.

WITTEK MFG. CO.
4305 W. 24th PL., CHICAGO, U.S.A.

TRUCK ENGINEERING TRAILERS and BODIES

for all types of service

TRUCK ENGINEERING CORP.

1802 East 38th St. Cleveland, Ohio



TOUGH LUG NUTS OFF QUICK: EASY..

Contact—Impact, and wham, those tough lug nuts come off quick and clean with the two piece

JARI SHOCK WRENCH

No feeling, changing big truck and bus wheels with this wonderful power wrench is an easy one-man job. No lengths of pipe, no banging and hammering (and cursing) to loosen tough lug nuts. It's the swing that does it. Handle turns free through a 120° arc, then hits that lug with a sledge hammer blow! This 17 pound wrench actually develops 40,000 pounds torque, measured by impact-torque-measuring machine. Many fleets now equipped. Write TODAY for catalog sheet and prices. Jobbers and Dealers Wanted.

JARI PRODUCTS, INC. • 2938 PILLSBURY AVE. MINNEAPOLIS, MINN.

AUTOPULSE ELECTRIC FUEL PUMP

- Uninterrupted Schedules
- Instant Starting
- Greater Economy
- No Vapor Lock
- Added Protection



AUTOPULSE CORP., DETROIT

WHY CHANGE OIL?

WHEN "OIL DOES NOT WEAR OUT"

U. S. BUREAU OF STANDARDS

Car, Truck, Tractor Owners—Stop wasting your money on needless oil changes! Keep oil clean and "oily" indefinitely. Our FREE booklet "Oil Facts" a revelation. Ask your dealer for a copy, or write to—

RECLAIMO MFG. COMPANY

2306 N. WESTERN AVE., DEPT. 20, CHICAGO, ILL.

Color Guard

The first entry in a new CCJ department destined to list men of the industry who are called to the colors for active duty goes to Lt. Col. Oscar A. Axelson, 187th Field Artillery, who reports at Fort Ethan Allen, New York, on Jan. 2, 1941. He has long been associated with Columbia Engineering Corp., New York.

Less detailed is word from Lincoln Engineering Co., St. Louis, that Advertising Manager John Smothers, has already reported for active duty at Fort Knox, Ky.



Frederic R. Speed, newly appointed as automotive engineer for the Pennsylvania Grade Crude Oil Association. His headquarters will be in Detroit

TRUCK PRODUCTION (United States and Canada)

	1940	1939	Per Cent Change
January	74,016	64,093	+15.8
February	71,690	63,606	+12.7
March	75,285	77,107	-2.3
April	76,807	68,066	+13.0
May	74,139	63,793	+16.2
June	67,787	66,964	+1.2
July	74,005	62,750	+17.9
August	41,533	40,868	+1.5
September	56,703	27,560	+106.0
9 Months	611,965	534,807	+14.8
October		65,079	
November		73,407	
December		84,260	
Total		757,553	

DUPLEX TRUCKS

BUILDERS OF
HEAVY DUTY

AND SPECIAL TRUCKS

ALSO

GENERATING SETS

DUPLEX TRUCK CO.
LANSING, MICH.

The Snow Plows Big Fleet Owners Are Using



Leading fleet owners prefer Baker Snow Plows, because Baker's big line of "V", reversible blade and one-way plows are backed by 32 years of experience in building dependable, economical snow moving equipment. There's a good Baker plow for your make of truck.

Send for 32 page Bulletin 829 on Truck Snow Plows—also special bulletins on tractor plows.

SOME FLEET OWNERS WHO USE BAKERS—

The Pullman Co.
City of New York
State of Illinois
Ford Motor Co.
Chicago Surface Lines
Swift & Co.
Port of N. Y. Authority
Eastman Kodak Co.

THE BAKER MFG. CO., 571 Stanford Ave., Springfield, Ill.

BAKER SNOW PLOWS

"Borky" Comments

Mr. McRafferty's fleet of trucks
Leaked oil each time they hauled.
Bad gaskets lost him many bucks,
Till A-V's were installed!



ARMSTRONG-VICTOR Cork Gaskets solved Mr. McRafferty's problem, and they can solve yours, too. For these gaskets are made from live, resilient cork—a natural seal against oil, water, and grease. They're rugged, and they're easy to install—because the bolt holes always line up. You'll recognize Armstrong-Victor Gaskets by the two-notch, double-guarantee trade-mark. Order handy envelope sets from your Victor jobber, and ask him for a free copy of Victor Gasket List No. 29. Or write to Victor Manufacturing & Gasket Company, P. O. Box 1333, Chicago, Ill.



Armstrong-VICTOR CORK GASKETS

CORKOLIN IN ROLLS

CORK HEADLAMP STRIPS

GLOBE

WHEEL DOLLY

GLOBE Wheel Dolly (Patented) provides a time- and effort-saving way to remove and replace heavy wheel equipment on buses and trucks. Fits all sizes of singles and duals. Provides mobile means of moving wheels in shops. Compact, sturdy and easily operated, the Globe Wheel Dolly effects real savings in maintenance work on heavy vehicles.

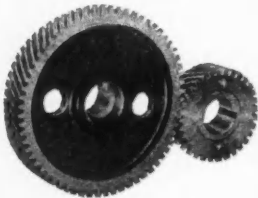


WRITE for descriptive bulletin on Globe Wheel Dolly.

GLOBE HOIST COMPANY
DES MOINES • PHILADELPHIA

CLOYES

for Split-second Silent Timing



When engineers recommend the gear with the silent, hair-trigger accuracy of action . . . it's a CLOYES TIMING GEAR.

CLOYES . . . the gears DESIGNED to LAST!
CLOYES GEAR WORKS
17214 Roseland Road, N. E., CLEVELAND, OHIO

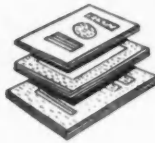
FRINK SNO-PLOWS

Both "Y" TYPE and ONE WAY BLADE TYPE

hand or power hydraulic control
FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.
CARL H. FRINK, Mfr., CLAYTON, 1000 1st., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

FREE BOOKS



. . . a special selection made by the editors . . . to get your copy, just check the letter on the post card between pages 194 and 195 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

Indium Treatment Discussed

Indium, one of the little-known metals until recent years, has been winning wide acceptance as a medium for treating engine bearings. To bring fleetmen up to date, The Indium Corp. of America (Utica, N. Y.) is offering a reprint of a talk on "Indium-Treated Bearing Metals," by C. F. Smart of the Pontiac Motor Division, General Motors Corp. Check "A" on the post card.

Infra Red Drying

Probably the newest of paint-drying processes is the use of the Infra-Red Ray. Its unique penetrating qualities make possible shorter drying times with lower temperatures. This and many other factors are discussed in a new booklet published by the North American Electric Lamp Co., St. Louis, entitled "Drying Problems Made Easy." It's worthwhile reading. Check "B" on the post card.

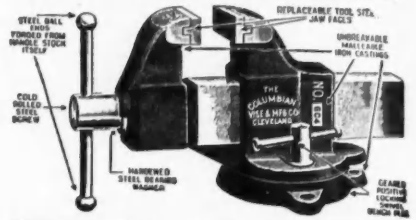
Pierce Governor Booklets

Two new booklets from the Pierce Governor Co. are crammed with useful information about many types of centrifugal governors designed to control vehicle as well as engine speed. One of the booklets begins right at the beginning with helpful information on such basic subjects as horsepower, torque, load, peak speed, etc. Check "C" on the post card for your copies.

"Bound-Batt" Bulletin

A four-page bulletin describing the new Dry-Zero Bound-Batt Insulation for refrigerated truck bodies has just been released by the Dry-Zero Corp., Chicago. It describes the properties and advantages of the new material and lists the three forms in which it is available. Check "D" on post card.

COLUMBIAN unbreakable malleable iron machinists' vises—accurate and efficient



Dart Trucks

HEAVY DUTY FOR OFF THE HIGHWAY SERVICE

—Specially Designed for—
Coal Mining—Iron Ore Mining—Copper Mining—Pit and Quarry—Logging—Oil Fields—Etc.
It Costs No More for Trucks Specially Built to Fit Your Needs. Have Our Engineers Visit and Analyze Your Operation.

DART TRUCK COMPANY
KANSAS CITY, MO.

The largest
fleets
specify



CONNECTICUT
DIRECTIONAL
SAFETY SIGNALS

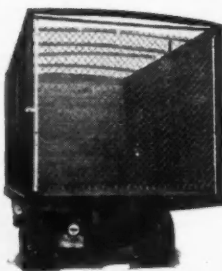
For running-in new and rebuilt engines use auxiliary lubricants containing "dag"* Brand colloidal graphite.

Acheson Colloids Corporation

Port Huron  Michigan

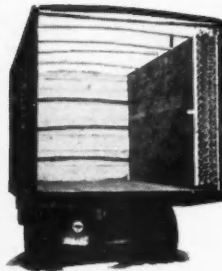
*REG. U. S. PAT. OFF.

CLOSED ← ATLAS Collapsible GATE → OPEN



Heavy galvanized wire suspended from rings which slide on a round track. Same "chain link" weave as is used in best quality fence around industrial plants, schools, estates, etc. Protects against theft and loss. Easy to open and close. Weave collapses within itself, saving space. Rigidly made for long, hard service, yet it is so light in total weight that average gate weighs only 90 lbs. Assembled in our factory from stock parts to exactly fit any truck. Easily installed by owner's men. Send for Data Sheet giving full details, then fill in 6 dimensions, and let us ship you one. Satisfaction guaranteed.

Quantity Discounts—Distributors Wanted



ATLAS FENCE CO., RICHMOND ST. & CASTOR AVE., PHILADELPHIA

OXYLATOR

CUTS MAINTENANCE
COST

CUTS FUEL COST

"The mechanical solution for crankcase dilution."

For detailed information and particulars, write—

Oxylator Co.
Grand Rapids, Michigan



GRAMM TRAILERS
"Ask the man who pulls one"
New Lightweight Design
Using Hi-Tensile Steel
GRAMM TRAILER DIVISION, Delphos, O.

IMPORTANT NEWS FLASH
Drastic Price Reduction On
"The GAS MASTER"



Due to improved production methods we are now able to offer the "Gas Master" at **F.O.B. Michigan City \$4.50** which is a great reduction from the former price of \$7.50. The quality and efficiency of the valve has not been affected and it still carries an unconditional "money-back" guarantee. We ask that you install one "Gas Master" for we know from past experience with other Fleet Owners that one installation will mean equipping your entire fleet.

Phone 3703

HIGHWAY EQUIPMENT, INC.
Oak & Harrison Sts., Michigan City, Ind.

KINNEAR TRUCK DOORS
Also Doors for Buildings

ALL METAL
... Coils like a window shade, out of the way ...
CONVENIENT
BURGLAR PROOF
FIRE PROOF
MORE DURABLE



Write for Details
The KINNEAR
Manufacturing Co.
2100-20 FIELDS AVE.
COLUMBUS, OHIO
Factories: San Francisco, Cal., and Columbus, Ohio

GUNK • The High Performance
Motor Block and Chassis Degreaser



• Eliminates fire hazard ... costs no more to use than oily, ineffective kerosene or similar petroleum solvents • Ask for literature.
CURRAN CORP • MFG. Chemists • Malden, Mass.

Barrett Equipment Catalog

A new profusely illustrated 42-page catalog from Barrett Equipment Co., St. Louis, tells just about all there is to know about the company's line of brake servicing equipment, from a lining shim stock, to a complete brake service department. Color illustrations with overprinted arrows together with accompanying text explain every vital part. Check "E" on the post card for your copy of Catalog No. 41.

"Snow Ahead"

How many times did it snow in your state last winter? What were traffic conditions on the many highways? What was the average depth of snow fall. These and other questions are answered in American Chain & Cable Co.'s new booklet "Snow Ahead." Also included are descriptions of important items in the Weed chain line. Check "F" on the post card for a copy of this handy booklet.

Royal-Norton Catalog

Monroe Acme Co., Chicago, makers of the Royal-Norton line of lighting equipment, mirrors and reflectors, has a handsomely illustrated catalog giving full details of the line. It contains descriptions of virtually every type of auxiliary truck lighting fixture, including clearance lights, dome lights, trailer fixtures, etc. Check "G" on the post card.

Curtis Compressor Catalog

Curtis Pneumatic Machinery Co., St. Louis, has a new 24-page catalog. Complete details of the company's line of air compressors including fittings and accessories are given, as well as some worth while discussion on such subjects as two-stage vs. single-stage compressors, unloaders, size requirements, etc. Better check "H" for a copy to have on hand.

"Lincoln Weldirectory"

The "Lincoln Weldirectory," published by Lincoln Electric Co., Cleveland, outlines procedures for virtually every type of welding job including aluminum, stainless steel, light gage steel, etc. In addition there's a section on latest Lincoln arc welding equipment. 56-pages. Check "I" on the post card.

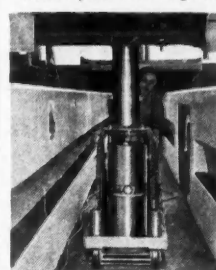
(POST CARD OPPOSITE PAGE 194)

GLOBE

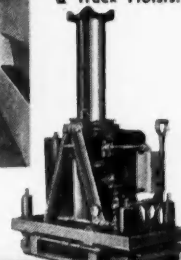
Electric-Hydraulic
PORTABLE PIT HOIST

GLOBE Portable Pit Hoist is recommended for use in free wheeling front or rear axles of trucks or buses when over a pit. Also used for removal and replacement of underfloor equipment such as pancake engines, transmissions, cab-over-engines, etc. Maximum lifting height 72".

Made by manufacturer of
Globe Auto
Hoist and Globe
Heavy-Duty Bus
& Truck Hoists.



WRITE for descriptive
bulletin on
Globe Portable Pit
Hoist.



GLOBE HOIST COMPANY
DES MOINES • PHILADELPHIA

Precision-built

AUTOCAR
TRUCKS

SHORT-WHEELBASE
OR CONVENTIONAL
GASOLINE OR
DIESEL
IN ALL
CAPACITIES



ARDMORE, PA. AND LEADING CITIES

SPEED CONTROL
Without Loss of Power

NORMAL MOTOR PERFORMANCE IN ALL SPEEDS UP TO SET SPEED LIMIT
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NOVEMBER, 1940

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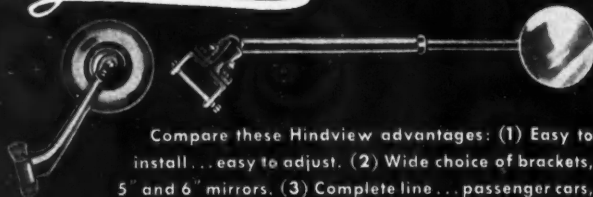
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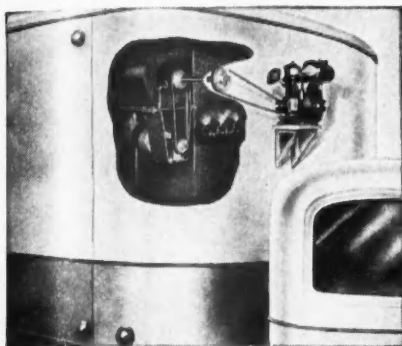
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Capacities from 1½ to 10 tons.

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Belden Wiring Kit

A new portable wiring kit known as 7668-S assortment is announced by the Belden Mfg. Co., 4689 W. Van Buren St., Chicago. The new outfit includes 50 ft. spools of 77Belden77 spark plug wires, 7716 and 7714 primary wires, with an assortment of primary and high tension terminals and distributor nipples, and a model 7500 Crimper and Cable Stripper.

Combination Piston Ring

A newly-patented combination cast iron and steel piston ring is available from the Marvin Piston Ring Co., 1822 South Hope, Los Angeles, Calif. The vented oil ring has a cast iron base with two steel segment rings fitting top and bottom. The compression ring requires only one steel ring, which fits flush with the side and top so that both steel and cast rings touch the piston walls. In both cases, the steel segments riding on the cast core is said to give the ring easy action and long life.

Autopulse Filter

For installation in truck models that have engines comparatively unprotected. Model M fuel filter is being offered by the Autopulse Corp., Detroit, Mich. The bowl of the filter is of drawn steel and is said to be rigid enough to resist tire-thrown rocks. It is constructed with an air-dome and is furnished with a 120-mesh screen. Model M is cataloged at \$1.15.

QUIZ ANSWERS

(See Page 166)

1. b. All 3 are manufactured by du Pont.
2. a. All 3 were once with Ford.
3. b. All 3 have been organized since before 1910.
4. b. All 3 are trade names of automotive products.
5. b. All 3 are used to make a harder steel.
6. a. Voters of all 3 states are voting on Anti-Diversion amendments.
7. c. All 3 were metallurgists.
8. a. All 3 are usually made of malleable iron castings.
9. b. All 3 are paint finishes for trucks and automobiles.
10. a. All 3 were introduced between 1910 and 1915.

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INFRA-RED RAY WILL ENABLE YOU TO

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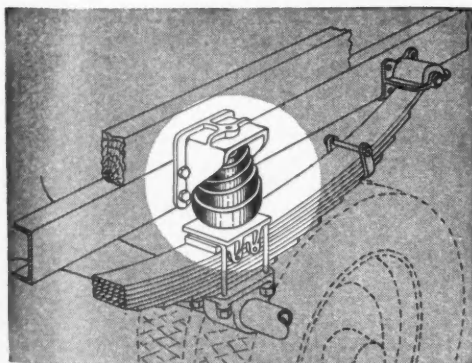
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